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FLEET OWNER

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DEVOTED to the BETTE
OPERATION and MAINTENANC
of all AUTOMOTIVE FLEET

FEATURES IN THIS ISSUE:

A "New Deal" in Milk Delivery . By C. J. Wieland

Diesels Cut Costs in Freight Fleet . . By B. E. Birun

1,300,000 Safe Miles at Night . . By E. I. Hibbard

How 89 Fleets Fit Piston Pins . . By H. Clay Fischer

DEPARTMENTS:

Trouble Shooters' Forum
As We Go to Press (News)
John Law Says (Court Decisions)
New Products for Road and Shop
Question of the Month Club

"THEY JUST KEEP *Rolling along*"

SAYS THE BRASHEAR TRUCK COMPANY, ST. LOUIS

ISN'T 10,000,000 miles of heavy duty truck service a pretty good test of motor and chassis parts? That's just the test that the Brashear Truck Company, St. Louis, has given Thompson parts. There are no soft jobs on their schedule. Men and trucks must keep going, must make their deliveries on time. Every dollar spent for parts must return a full dollar's worth of service.

How do Thompson parts stand up? Listen to Mr. F. Simpson, Supt.:

"Leadership in freight transportation is simply unfailing service.

"Our experience during the past twenty years has taught us to select products that stand the test of time and when we see the trade name 'Thompson Products' we reflect on the good record we have enjoyed in over ten million miles of motor and chassis service through rain, sleet, floods and extreme heat and cold.

"'They just keep rolling along'."

THOMPSON PRODUCTS, Inc., Cleveland, Ohio

"S" AND "V" VALVES
GRAPHITED (Self-Lubricating) VALVE GUIDES
DURACROME VALVE SEATS
VALVE SPRINGS AND RETAINERS
FACTORY DUPLICATE PISTONS

CHROME PLATED PISTON PINS
PACKLESS WATER PUMPS
TRYON AND SILENT-U SHACKLES
SELF-LUBRICATING OILITE BUSHINGS
ECCENTRIC AND RUBBEROD TIE RODS
THOMPSON CHASSIS BOLTS

Thompson Products

LOWER COST PER TON MILE

DUE TO FIRESTONE EXTRA CONSTRUCTION FEATURES

QUESTION No. 1—"Will the non-skid tread give me the greatest traction and protection against skidding?"

ANSWER—The patented construction feature of two extra layers of Gum-Dipped cords under the tread makes it possible for Firestone to use a wider, flatter tread with higher shoulders, that puts more rubber on the road. This, combined with the scientific non-skid design, gives greatest non-skid safety and traction ever known.

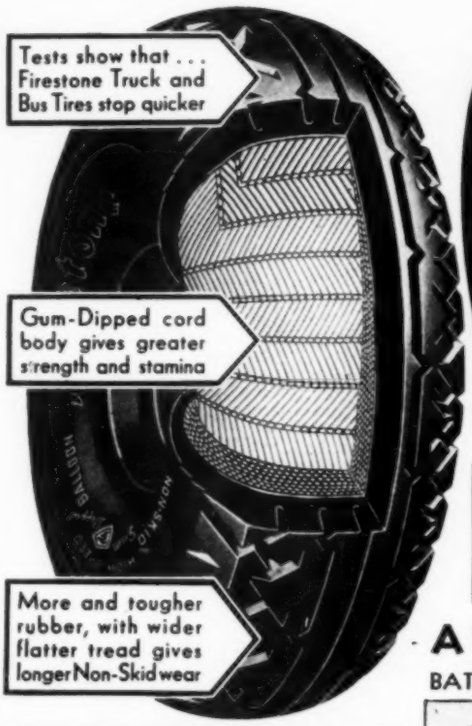
QUESTION No. 2—"Is the tire body protected against destructive internal heat, the chief cause of premature tire failure?"

ANSWER—Every cord in Firestone Tires is soaked and saturated in pure, liquid rubber by the patented Gum-Dipping process. This process, not used in any other tire, soaks every cotton cord and insulates every strand, preventing internal friction and heat, giving extra strength, longer life, greater dependability.

QUESTION No. 3—"Will the tread give me long wear at today's higher speeds?"

ANSWER—A new and tougher tread compound developed by Firestone gives you longer wear at lower cost per mile, even at today's higher speeds.

Call on the Firestone Service Store or Firestone Tire Dealer in your community today. Let him tell you about the exclusive construction features of Firestone Truck and Bus Tires which will give you lower operating costs and greater safety.


Tests show that . . . Firestone Truck and Bus Tires stop quicker
Gum-Dipped cord body gives greater strength and stamina
More and tougher rubber, with wider flatter tread gives longer Non-Skid wear

OLDFIELD TYPE
Gum-Dipped
The Tire That Taught Thrift to Millions

SENTINEL TYPE
Volume Production Tire for Light Trucks

★★★★★ *Listen to the Voice of Firestone—featuring Richard Crooks, Gladys Swarthout, or Margaret Speaks — every Monday night over N.B.C. —WEAF Network . . . . A Five-Star Program*

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REAR VIEW MIRRORS · LAMPS · REFLECTORS · FLARES · RADIATOR HOSE

HIGH SPEED TYPE
Gum-Dipped
GREATEST TIRE EVER BUILT FOR ALL-ROUND SERVICE, UNEQUALED FOR HIGH SPEEDS and HEAVY HAULING

Firestone

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MEN *as well as machines* need "LUBRICATION"

Read What These Firms Say About It

WESTINGHOUSE—"We find them useful for reference."

GENERAL ELECTRIC—"This copy is going to be helpful to us."

THE TERRY STEAM TURBINE COMPANY—"Of wide scope and very useful."

ALLIS-CHALMERS MANUFACTURING COMPANY—"Valuable information well put together."

BAKER PERKINS COMPANY—"Will be a help in solving all problems."

SOCO LOWELL SHOPS—"We use them constantly."

INGERSOLL-RAND COMPANY—"These are excellent reference books."

What is "Lubrication" . . . Who is it for . . .

"Lubrication" is a technical bulletin that deals accurately, authoritatively with specific matters of lubrication. One issue may deal with a specific type of machinery such as air compressors. Another, may deal with all the types of machinery used in a particular field—such as coal mining.

For instance, in 1934, "Lubrication" dealt with these important matters—Plain Bearing Design, Construction and Composition. Electric Motor Lubrication. Lubrication Practice in the Coal Industry. Lubrication of Textile Machinery. Lubrication Requirements of Metal Forming Machinery. Variable Speed Transmissions—Thin Oil Film Lubrication.

"Lubrication" is written for the management seeking more economical plant operation; for the engineer, the superintendent, the machine operator who desires to keep his machinery working at peak efficiency. It is for the man interested in technical matters and the man concerned with practical matters.

Why is "Lubrication" valuable . . . How can it be used . . .

"Lubrication" is valuable because it gives complete and up-to-date information. It tells you what the builders of machinery say about the lubrication of their machinery. It gives you data on the latest plant practices in keeping machinery operating efficiently and economically. Plenty of pictures are used to illustrate the text.

"Lubrication" can be used by the executive as a guide to economies in power, maintenance. The superintendent, foreman, machine operator will find it a valuable aid in bettering machine efficiency, plant operation. Engineers will glean from it much helpful data on design and the latest advances in mechanical improvements.

When and where can you get "Lubrication"

"Lubrication" is issued once a month. It is published only by The Texas Company. There is no cost or obligation involved in being a regular reader of "Lubrication." It is offered absolutely free.

There is an easy way to get "Lubrication" every month. Simply

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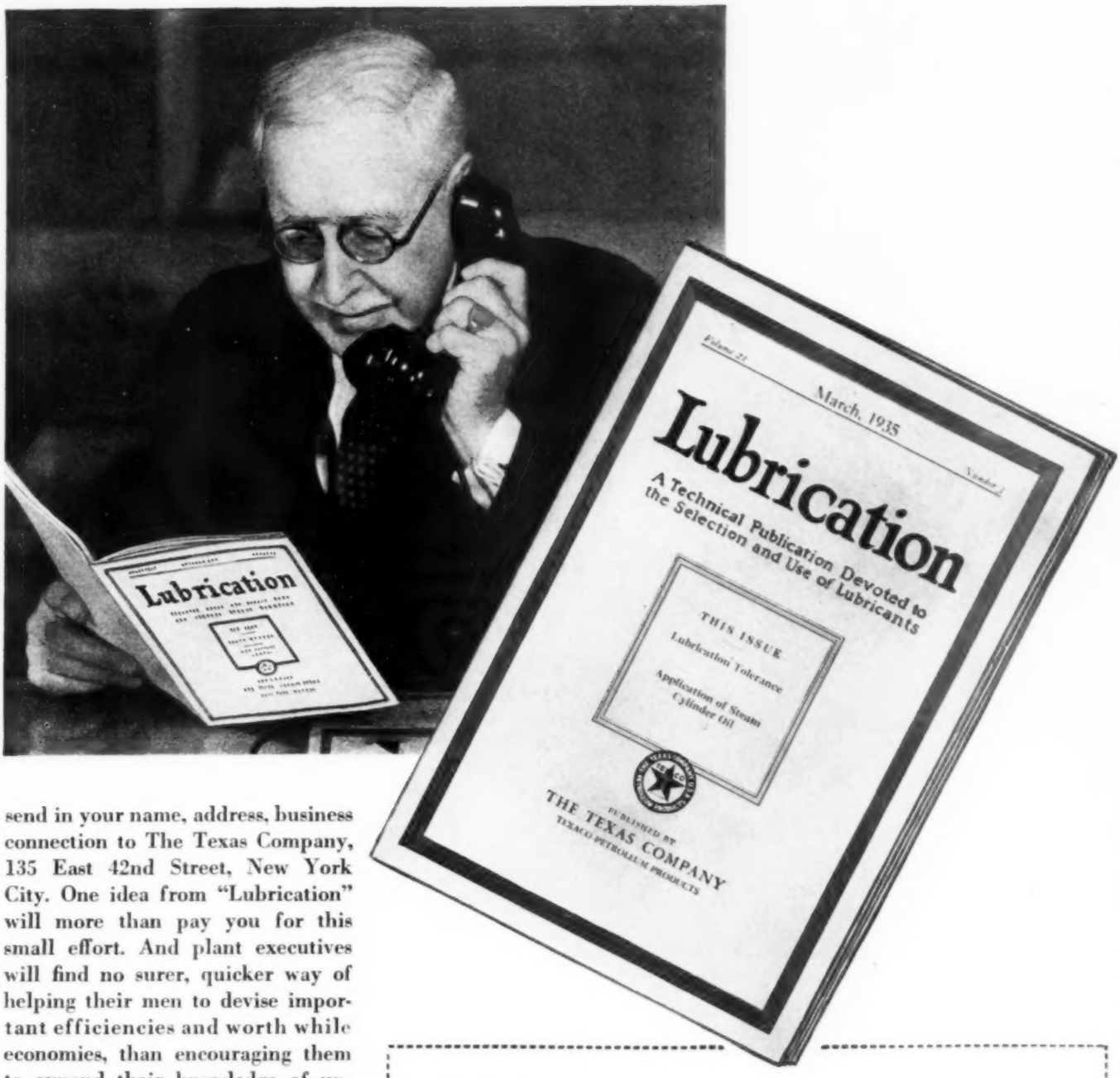
REFINERY TESTED FOR UNIFORMITY . .



send in your name, address, business connection to The Texas Company, 135 East 42nd Street, New York City. One idea from "Lubrication" will more than pay you for this small effort. And plant executives will find no surer, quicker way of helping their men to devise important efficiencies and worth while economies, than encouraging them to expand their knowledge of up-to-date lubrication practice. "Lubrication" provides this information free every month.

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135 East 42nd Street, New York City

Nation-wide distribution facilities assure prompt delivery

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Without cost or obligation put me on your list to receive "LUBRICATION."

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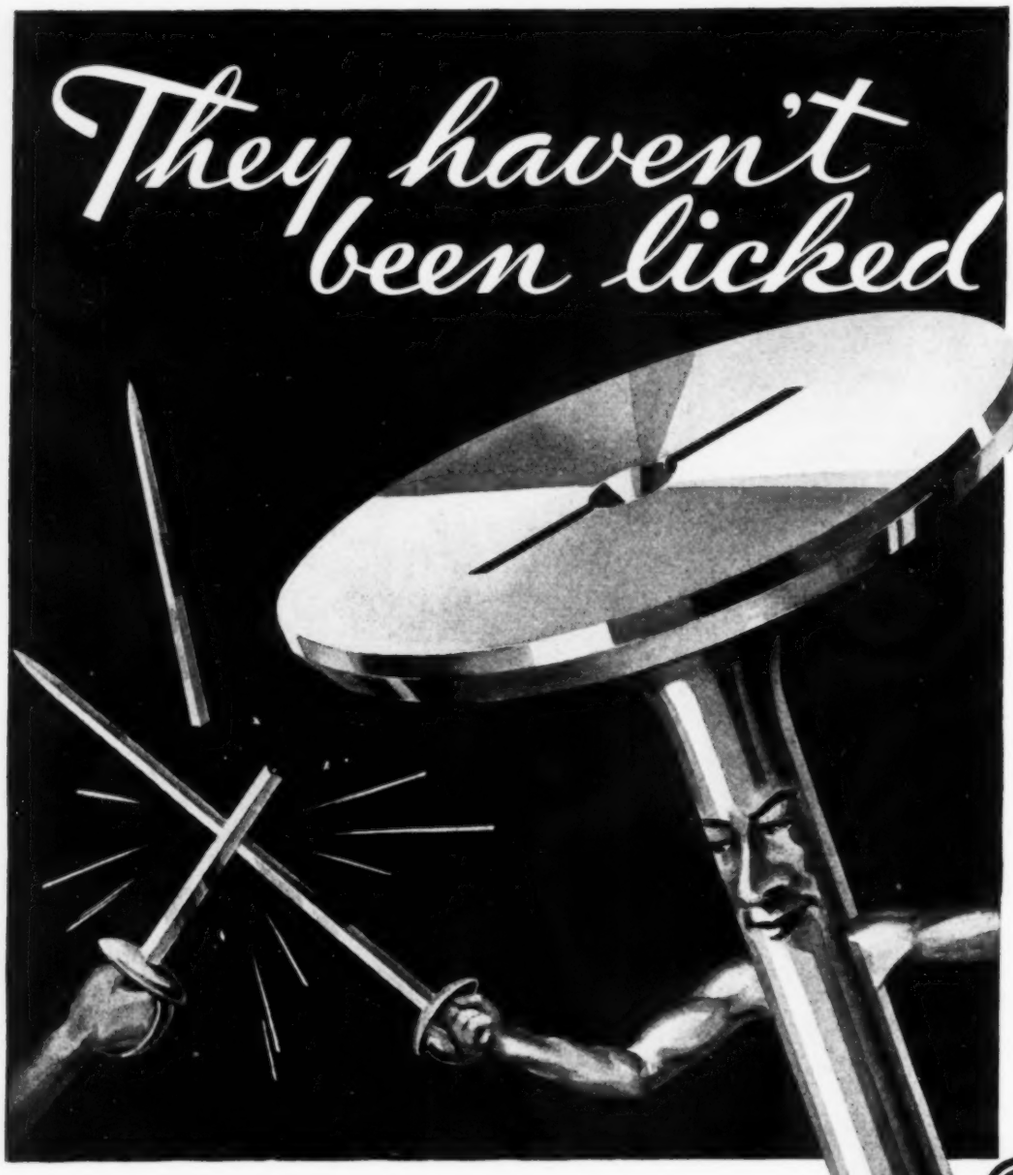
. . SERVICE TESTED FOR ECONOMY

They haven't been licked yet!



No fight is too stiff for Toledo Super-Forged "Guaranteed" Valves. Made of an extra tough, heat-resisting steel, Toledo Valves can take plenty of punishment—and keep coming back for more. Equip your fleet with the Guaranteed Valves, especially designed for modern high speed motors. Your Toledo jobber has a complete stock.

GUARANTEE

Toledo "Type S" Super-Forged Valves are guaranteed. Your jobber will give you, without charge of any kind, a new valve in exchange for any Toledo "Type S" Super-Forged Valve which proves defective in service.

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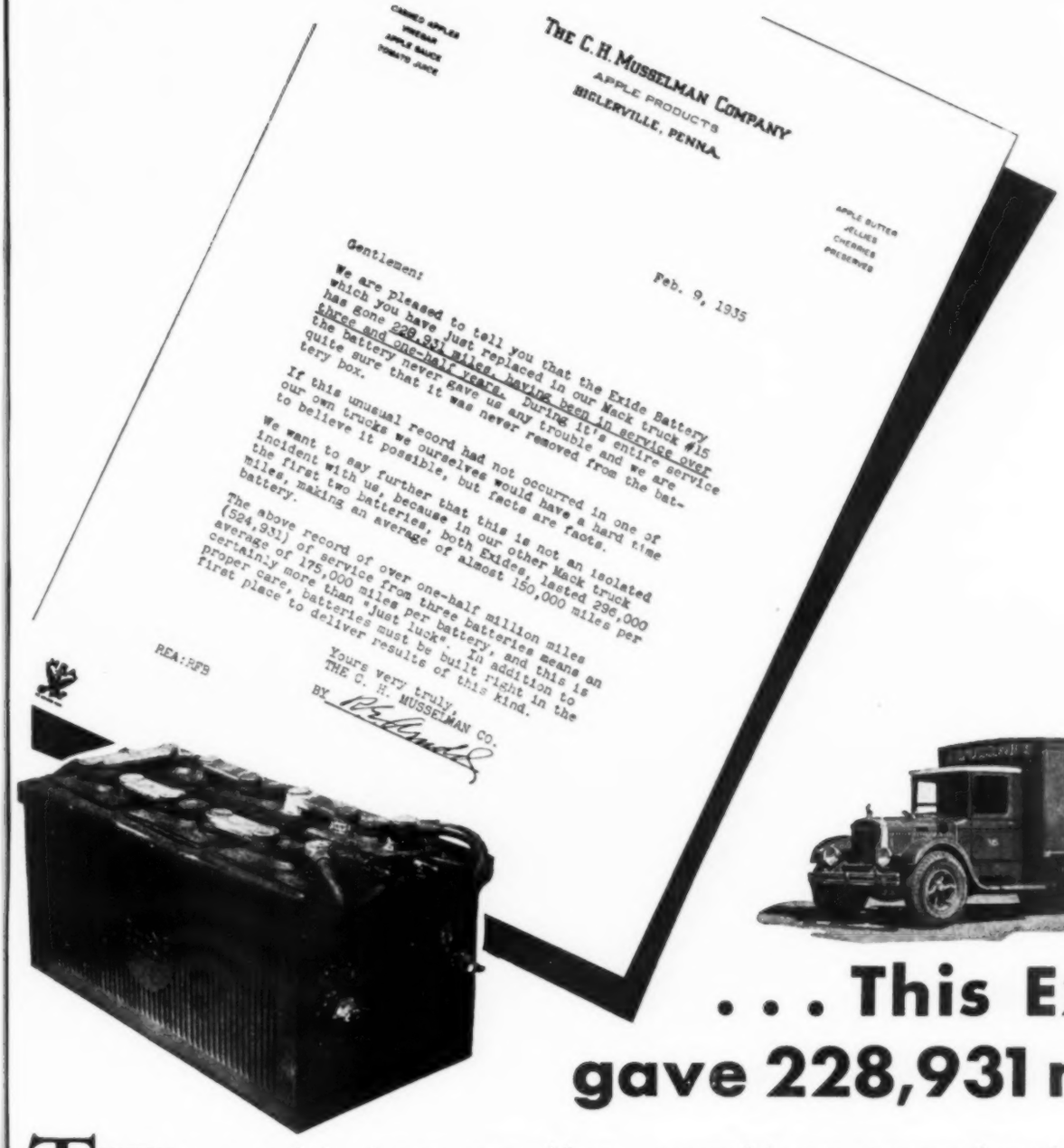
TOLEDO



THE C. H. MUSSELMAN COMPANY
APPLE PRODUCTS
BIGLERVILLE, PENNA.

Feb. 9, 1935

Gentlemen:

We are pleased to tell you that the Exide Battery which you have just replaced in our Mack truck #15 has gone 228,931 miles, having been in service over three and one-half years. During it's entire service the battery never gave us any trouble and we are quite sure that it was never removed from the battery box.

If this unusual record had not occurred in one of our own trucks we ourselves would have a hard time to believe it possible, but facts are facts.

We want to say further that this is not an isolated incident with us, because in our other Mack truck we have had two batteries, both Exides, lasted 296,000 miles, making an average of almost 150,000 miles per battery.

The above record of over one-half million miles (524,931) of service from three batteries means an average of 175,000 miles per battery, and this is certainly more than "just lucky". In addition to proper care, batteries must be built right in the first place to deliver results of this kind.

Yours very truly,
THE C. H. MUSSELMAN CO.
BY

REA:RFB

. . . This Exide gave 228,931 miles

THERE is very little that we can add to this letter from Mr. Arnold, written voluntarily to express the satisfaction of the C. H. Musselman Company with the service they have received from Exide Batteries. The C. H. Musselman Company is to be congratulated on a truly fine record!

It is worthy of note that excellent care contributed to the long life of these Exides. A minimum of attention keeps Exides on the job, and a simple, systematic maintenance routine enables them to deliver all the long, economical service built into them.

Why not be guided by the experience of successful truck operators throughout the country, and cut costs by standardizing on Exide? Exide Engineering Service, conducted by trained and experienced battery engineers, is available to fleet operators free. It can help you reduce your battery maintenance costs.

THE ELECTRIC STORAGE BATTERY CO., Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

Exide
BATTERIES
FOR EVERY TYPE TRUCK

TURNSIGNAL

IT FLASHES
and the car behind—KNOWS A TURN IS TO BE MADE.

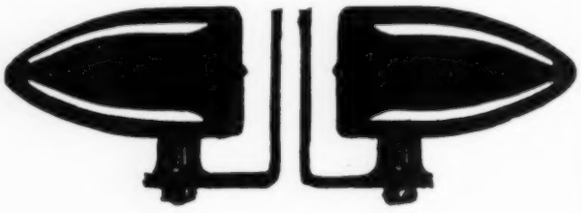
IT BUZZES
and the driver—KNOWS THE SIGNAL IS ON.

PREVENTS ACCIDENTS
is the least costly safety insurance. It prevents accidents.

MAKES FRIENDS
creates a favorable attitude—toward trucks on the highway by removing the greatest objection to them.

LOW COST
the cost of TURNSIGNAL is insignificant compared to the service rendered and in the end, its cost is less than 1/10 as much as some of the low price signalling devices.

Let us tell you more about it.



Officially approved by all states requiring turn signaling equipment.

WATCH FOR TRADE MARK

TURNSIGNAL
CORPORATION
400 E. Rittenhouse St., (Germantown) Phila., Pa.

The

FLEET OWNER

Published Monthly in the interests of Automotive Fleet Owners who maintain their own Repair and Service Shops and devoted to the better Operation and Maintenance of Truck, Trailer, Bus, Passenger Car, Taxicab and all Automotive Fleets.

VOL. 15 New York, July, 1935 No. 1

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ABC

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These 10 FEATURES *alone* assure *greater earnings*

GMC 1½-2 ton truck of value has these and 37 other money-saving advantages

In the light of your own experience and with your business and your hauling needs in mind, place your own valuation on these ten vital features of the GMC 1½-2 ton truck of value. Every one of them is important. Every one of them contributes to greater savings or improved performance or longer life. Combined they assure a degree of economy and a performance ability that not one of the other low-priced competitive trucks can match.

The GMC branch, distributor or dealer organization in your locality stands ready and able to prove with facts why the GMC 1½-2 ton truck of value, with its combination of 47 important quality features, will definitely out-perform and out-earn.

Mounting sales . . . words of praise from owners . . . repeat orders . . . performance records . . . cost sheet evidence. All testify to the surplus value of this many-feature truck. And inspection and comparison, with your needs in mind will, we feel certain, confirm that testimony.

1 Greater payload capacity—The GMC will haul more per trip and per day, earn more for its owner.

2 Greater horsepower—84 horsepower engine assures more work ability.

3 Greater sustained torque—resulting in better hill climbing ability, better acceleration and the ability to haul heavier loads faster.

4 Less chassis weight per brake h.p.—all useless deadweight has been "engineered" out of the GMC.

5 Centrifuse brake drums—combine the desirable braking surface of cast iron with the strength of steel; non-warping, non-scoring, economical.

6 85-pound drop-forged crankshaft with harmonic balancer—exceptionally rigid and smooth. Eliminates destructive engine vibration.

7 Spoksteel wheels—More costly than other types but 2 to 3 times stronger.

8 Roller bearing steering gear—eliminates friction and thus reduces wear and the need for frequent adjustment. Easier steering also provided.

9 GMR cylinder head—provides high compression performance with ordinary fuels.

10 Rifle-drilled connecting rods—provide lubrication under pressure direct to piston pins—lower upkeep expense.

General Motors Trucks *and* Trailers

1½-22 Tons

GENERAL MOTORS TRUCK CO. PONTIAC, MICHIGAN

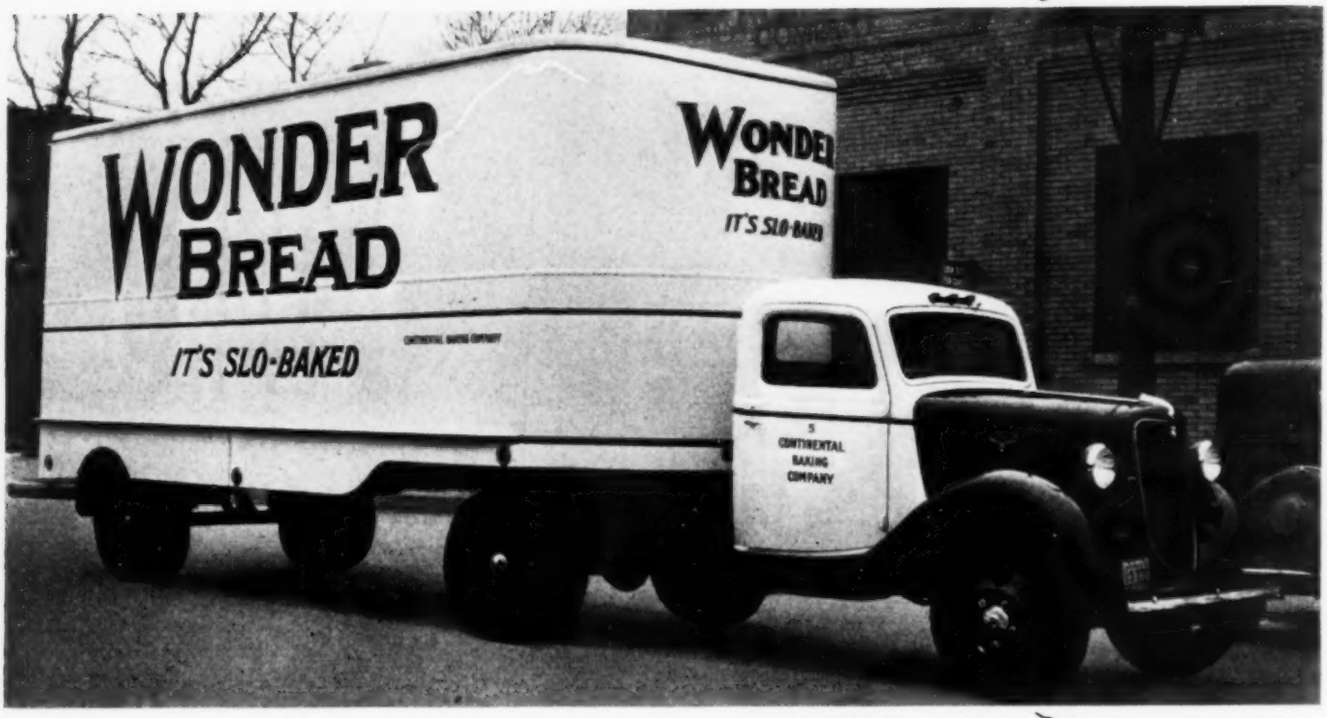
Time Payments Available Through Our Own Y. M. A. C.

For Startling Performance and Still Greater Economy

Revolutionary dual performance axle now available for GMC 1½-2 ton truck. Provides high gear (5.14 to 1) for fast movement on the level at economical engine speed and a low-high gear (7.15 to 1) which assures better performance with full payloads on hills or wherever the going is hard.

MANY A PROBLEM OF PROFIT IS REALLY A PROBLEM OF COSTS

THIS FLEET OWNER HAS FOUND THE ANSWER



SOMETIMES business men forget that PROFIT is what's left after all COSTS have been subtracted from all INCOME. Increasing net profit is not always a matter of getting more business. In many cases, it is a matter of lowering costs.

One way to lower costs is to gain the advantages of V-8 Economy in the operation of your business vehicles. With V-8 Economy, you save three ways . . . on first cost, on operating cost and on maintenance cost. And with V-8 Performance you can offer better service and attract new business too.

Your Ford dealer will be glad to let you make your own "on-the-job" test . . . with your own loads, over your own routes, with your own driver at the wheel. Call him today and ask for this test . . . and ask about the Ford Engine Exchange Plan and other parts exchange privileges that assure low maintenance costs.

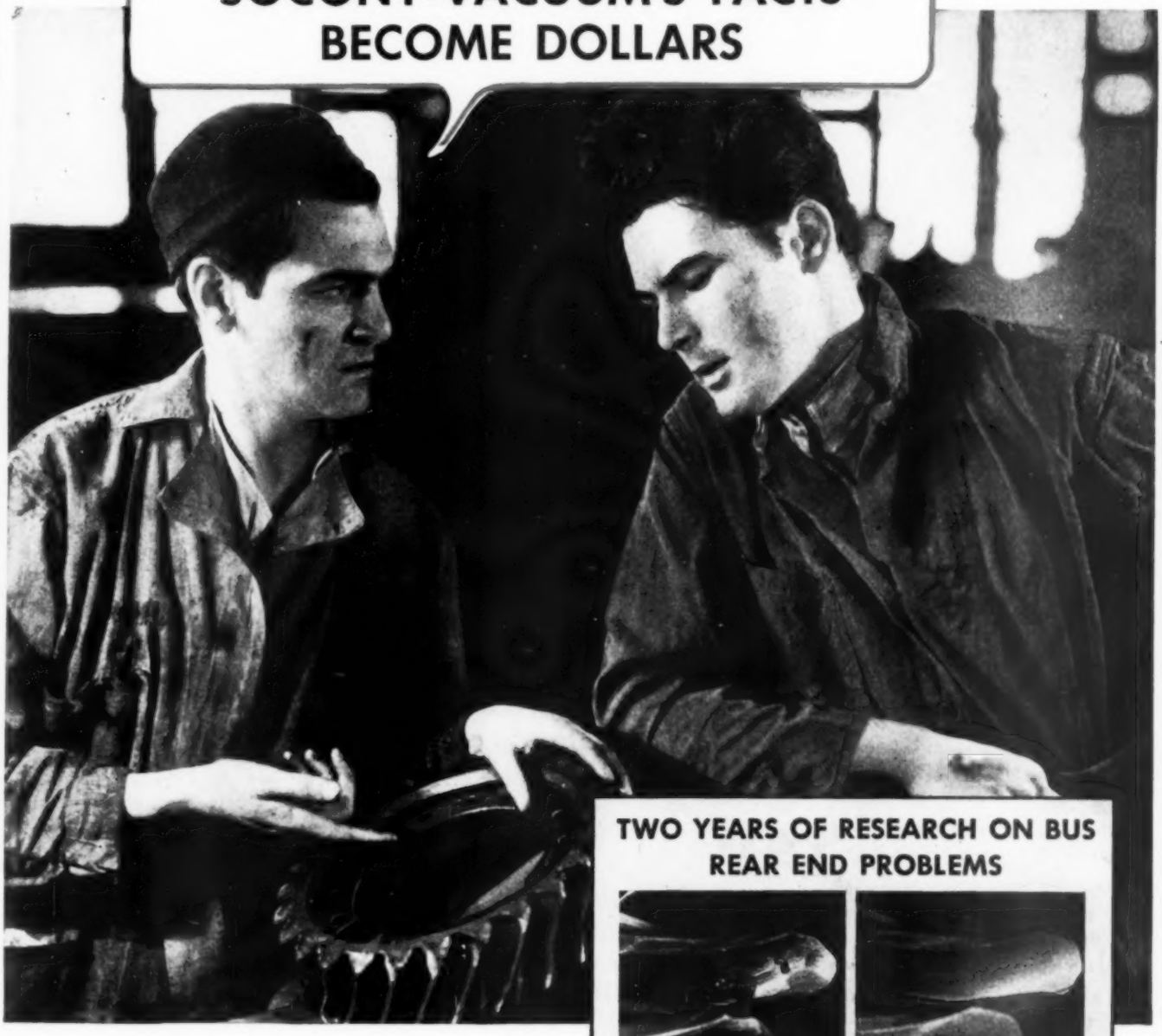
THE FORD V-8 TRUCK

USED AS TRACTOR WITH SEMI-TRAILER

Because of the better-balanced load distribution, the cab-to-axle dimension has been increased by 6½ inches, permitting jack-knife turns with a full-width semi-trailer and with the trailer coupling mounted in its correct position, forward of the rear axle. Unit shown is 131½-inch wheelbase chassis with cab.

FORD V-8 TRUCKS AND COMMERCIAL CARS

HERE'S WHERE SOCONY-VACUUM'S FACTS BECOME DOLLARS



TWO YEARS OF RESEARCH ON BUS REAR END PROBLEMS

PICTURES SHOW two identical gear wheels run under identical conditions with different lubricants. Wear, pitting and corrosion varied as much as 900 per cent. One of many studies.

Socony-Vacuum's two-year Scientific Study has taken all the "Guess" out of Rear-End Lubrication

FOR A PERIOD of two years, we made exhaustive tests . . . wore out rear-ends under all types of conditions . . . discovered practical, essential facts about rear-end lubrication. Today, fleet owners all over the country are making use of this information . . . are using Mobilube, the ideal rear-end lubrication, that developed from the study . . . are saving money.

The results of these tests are available to you. Call or write any of the Socony-Vacuum companies listed below, and let one of our engineers show you some cold facts that can be turned into dollars.

SOCONY-VACUUM OIL COMPANY, INC.

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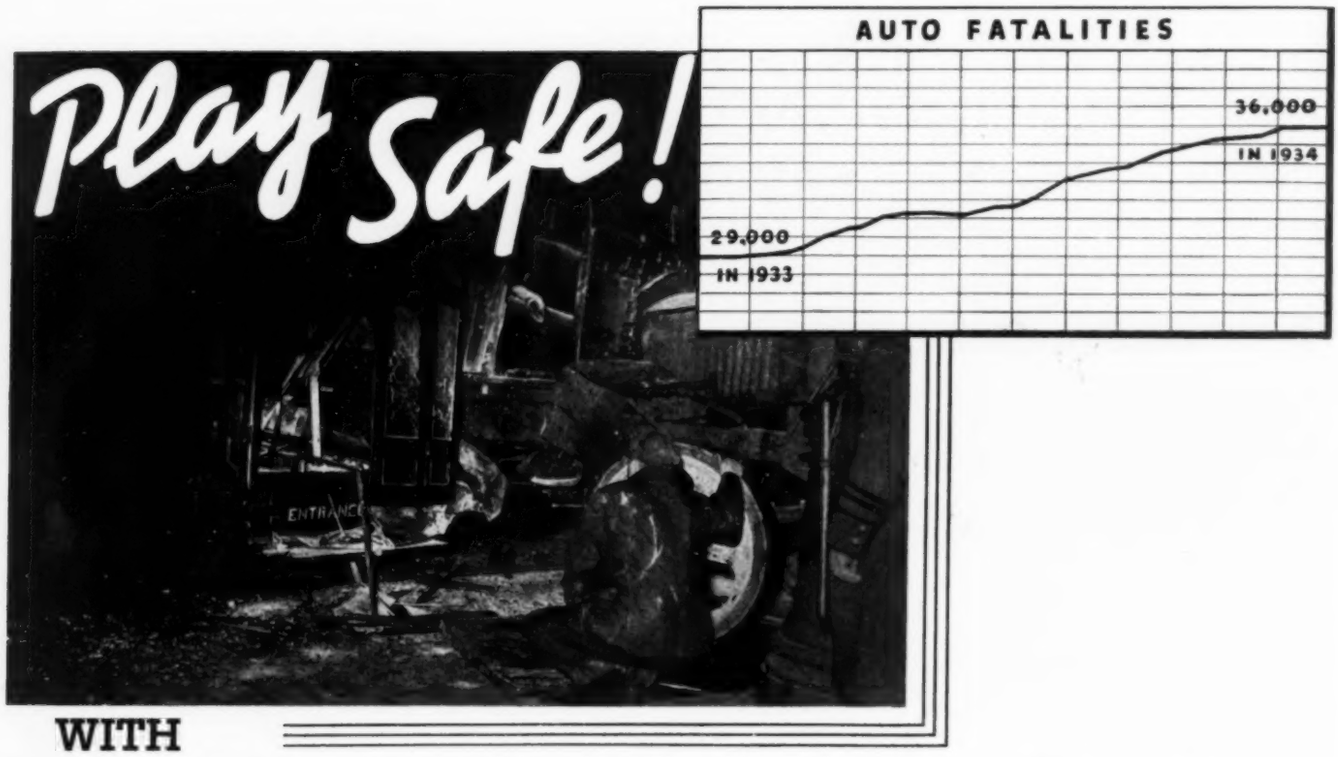
MOBILGAS . . MOBILOIL . . MOBILGREASE

SOCONY-VACUUM



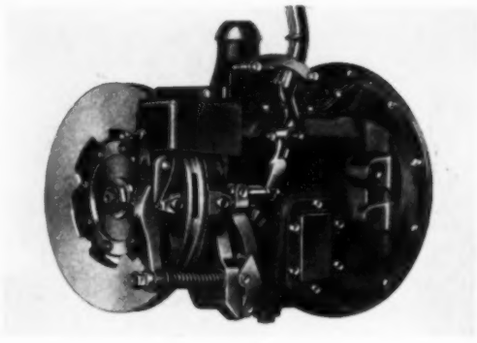
WITH

Tru·Stop Emergency Brakes

● The 24% increase in auto fatalities between 1933 and 1934 involved thousands of commercial vehicles. Made many fleet owners think most seriously of their responsibility to the public and to their own businesses.

New speeds, new driving conditions, new responsibilities. And now, fortunately, new brakes. TRU-STOP Emergency Brakes—fast, but smooth, in operation. And, above all else, *positive in action*. Positive in release, too.

Made to handle a heavily loaded truck in an emergency, but very useful as an auxiliary to the service brakes, when needed.



Specified for U. S. Army Trucks

The U. S. Army wanted emergency brakes that would hold 2½-ton 4-wheel drive trucks on a 57% grade. TRU-STOP Brakes were chosen. They showed up so well under the severe tests that they were at once applied to 400 new "Federal" trucks.

TRU-STOP Emergency Brakes do a perfect job of braking—without chatter, without tendency to grab. They are easily adjusted and serviced—and require very little adjustment or servicing.

Ventilated discs quickly dissipate the heat generated by braking. Lining surfaces wear uniformly because braking pressure is equally distributed. Any driver can reline in a few minutes.

More than Laws Require

TRU-STOP Emergency Brakes more than comply with the new laws which set brake performance standards in the various States. Give you, in other words, a liberal safety factor, which may some time prevent serious trouble.

Tell us something of your equipment and operating conditions. We may be able to make suggestions of value to you.

AMERICAN CABLE COMPANY, INCORPORATED
Automotive Division, Bridgeport, Conn.
An Associate Company of the American Chain Co., Inc.
In Business for Your Safety
Manufacturers of the famous WEED TIRE CHAINS

ACCO

TRU·STOP EMERGENCY BRAKE

VOL. 15
NO. 1

FLEET OWNER

JULY
1935

DEVOTED TO THE BETTER OPERATION AND MAINTENANCE OF TRUCK, TRAILER, BUS, TAXICAB, PASSENGER CAR, AND ALL AUTOMOTIVE FLEETS.

Stripping *the* Thread » »

(The Editor's Column)

NATIONAL TRUCK WEEK?

● Another event, typical of efforts to make railroads more popular with the public, and a legitimate effort at that, was enacted one week last month. . . . All railroad locomotives on Western roads, we are told, whether in the roundhouses or on the rails, blew their whistles at an appointed time, for one full minute, to inaugurate "railroad week." . . . How about the raucous sounding of horns for one full minute in commemoration of the good work that motor trucks are doing? . . . We suggested this to some truck officials and pointed out that the Fourth of July would be as good a time as any, thus celebrating two things at once. . . . Whether or not it will be followed out, it is difficult for us to determine, since this is written considerably in advance of the date, and you may not receive this issue until after the Fourth, on account of the Holiday. . . . However, if your ears were greeted with a din of automobile horns, now you'll know what it was all about. . . . But seriously, there have been all kinds of "weeks." Here are a few of them: National Apple Week, National Umbrella Week (when it didn't rain), Eat-more-Candy Week (the kids didn't object), Be-Kind-to-Animals Week, Fire Prevention Week, etc., etc. . . . So why not a "National Motor Truck Week"? . . . Dealers could arrange special displays, stage parades, and pull similar publicity stunts and fleet operators could participate, too, and thus "cash in" on some additional publicity. . . . We're offering the idea for whatever it may be worth, free, gratis and for nothing. . . . Some enterprising publicity man could do the industry a good turn and make a bit of change for himself as well.

IN THE WRONG DEPARTMENT?

● We really should not mention it here, but somehow or other we can't seem to resist the temptation, since we feel that the device is something that many fleet men have been seeking for many years. . . . Elsewhere in this issue you will find illustrated and described the new vacuum-pump recently developed by Bendix Products. . . . Poor, overworked Mr. Intake Manifold has been taking it on the chin for many years. First they gave him a windshield wiper, or was it a vacuum-tank? Then they took the vacuum tank away from him and instead

gave him an automatic clutch to actuate, a couple of fancy horns to toot and a nice, big booster-brake to work on during his spare time. . . . More recently, Mr. Manifold has also had to carefully guard your automatic spark advances, so that they would not run ahead of themselves at certain throttle positions. . . . Other jobs were also delegated to him, such as automatic starting devices, etc. . . . So it is only fitting and proper that some good Samaritan should come along and remove the burden, providing a better and more positive means of providing vacuum —which one fleet mechanic aptly describes as "a tank full of nothing, and lots of it." . . . The new Bendix development bids fair to be the answer to many a fleet man's prayer, and if you'd like to get full details, without obligation, just let your good Editor know about it, and they will be *mailed*, free and quickly. . . . And, once more, pardon us for mentioning the thing in this column.

●

DATA ON ELECTRIC TRUCKS

● Not so long ago we related a story concerning a "confirmed" electric truck user, who, although he had to *hire* a gasoline truck occasionally, boasted of an unusually low cost-record and stated that he was 100% satisfied with the performance of his electric fleet. . . . Whereupon those in favor of electrics remarked "Fine stuff," and on the other hand, those who have no use for electrics were overheard to mutter, "Oh Yeah?". . . . All of which proves that the subject of Gas vs. Electric Trucks is still somewhat controversial, and the easiest way to get into an argument is to bring that subject up. . . . Of course, we can't participate in the arguments; so the best thing we can do is to call your attention to recent developments in *both* fields of endeavor. And here is the latest bit of information in the electric truck field. It's a 28-page book that sets forth certain facts to prove that modern electric trucks *can* make economical deliveries in metropolitan areas. . . . If you'd like a copy, we'll be glad to get one for you, without obligation of course. Just drop a line to the Editor and ask for a copy of the "electric truck book." . . . You'll find lots of interesting data in it, we assure you—and plenty of pictures!

(*Please turn to page* 14)

YOU SEE IT "FIRST" IN FLEET OWNER

The Editor's Column » »

(Continued from Page 13)

WE TOLD YOU SO!

● While we're not the type of person who likes to run around shouting "We told you so!", whenever one of our pet ideals is proven out, it is quite difficult to refrain from "pointing with pride" to the first article in this month's issue, which deals, among other things, with the subject of drivers' uniforms. . . . You will recall that a few months ago we stressed the advisability of equipping all drivers with standardized uniforms and pointed out ever so many advantages that might accrue therefrom, such as advertising value, improved morale, cleanliness, etc. . . . Well, gentlemen, at least *one* fleet operator agrees with us and you will find *his* reasons in the article which begins on page 16. . . . And if you're considering uniforms for your own drivers, item No. 236 on page 46 will bring you an elaborate catalog with samples, delivered right to your door by one of Mr. Farley's efficient postmen.

●

FIND THE PROFITS?

● Here's another to add to your book of maxims: *"Profits are often hidden away in a trucking company's cost records, rather than found in the sales records"*. . . . Trucking companies are beginning to agree with the man who said it first, we understand; how true this is in some operations.

●

DON'T SPARE THE SPARE

● Some months ago, in analyzing one of our "surveys" on electrical equipment failures, we pointed out the advisability of carrying a spare condenser on each vehicle and further asserted that it be of the heavy-duty type, which will prove to be cheaper in the end. . . . We've taken a lot of kidding about this, some fleet men asking us if we didn't think that they ought to carry a spare crankshaft, too. . . . But if we wait long enough, every "worm will turn" and this month we have the pleasure of being completely vindicated, when you read the fleet story which appears on page 20 of this issue. . . . There is an operator who carries not only a spare condenser, but a spare fuel-pump, too, in addition to spare fuses and headlight bulbs. . . . So what? . . . So they took the spare condensers and established a safety record of 1,300,000 safe night-miles in their fleet of overnight delivery service trucks. . . . And, which is more, since this fleet is one belonging to none other than G-E, we can take it for granted that they knew what they were doing, since electrical equipment is right down their alley. . . . Anyway, the article warrants publication; it's a good record and one that everyone would do well to duplicate.

●

WHAT, NO SIGNAL DEVICE?

● Perhaps that fleet of five trucks doesn't run into Connecticut, where men are men and directional-signals are required, but we could not help noticing that nothing was said of turn-signals on G-E's completely-equipped vehicles. . . . In our opinion, that's about all that they need to make their vehicles "the safest equipped ones on the highways." . . . We don't know whether or not their very few accidents occurred while making turns, but we *do* know that most of the accidents that happen while making turns are caused by lack of, or faulty signalling. . . . And if this construed as a "plug" for the manufacturers of signalling-equipment, that's o.k. with us. . . . There are only about seventeen of them on the market, and we play no favorites.

●

SOMETHING FOR NOTHING?

● Don't say "It can't be done!" . . . Every once in a while we hear of some altruistic (big-hearted to you) manufacturer offering some useful publication, souvenir or service, which is stated to be free for the asking, without obligation, and so on. . . . The skeptics, of course, keep their fountain-pens in their pockets and refrain from clipping coupons, believing deep down in their hearts that there is a "catch" to it somewhere, or that the offer is just some glorified attempt to sell them something that they do not wish to buy. . . . Continue to think so, if you will. We have done a lot to eliminate this feeling of "defense" and the large number of returns to anything that is offered through the columns of *this* publication is gratifying evidence of the fact that we really are here to serve the fleet operator *first*! . . . We have recently put ourselves in your shoes and became "coupon clippers"—but in a different field of endeavor—the marine field, since our hobby is boats. . . . Some of the things that we have received *by mail* are really worth talking about—viz.: a book of tide-tables of the Atlantic Coast; a trouble-shooting manual on marine motors (we shouldn't need that); a book of charts covering eastern waterways, similar to road maps; a handsome catalog covering a popular line of yachts (including many bathing beauties reposing thereon); and others. . . . Don't believe it if you won't, but these came without salesmen, and they really were "free for the asking." So you see, it's being done today. . . . The foregoing lengthy prelude simply leads up to this: One of the major oil companies (Texaco, if you must know) has been sending us their monthly magazine, *Lubrication*, every month for the past ten years. Each month the subject of lubrication is discussed, but on a different subject—today it may be truck motors; next month it might be Diesel engines; and another month it may cover road building machinery; and so on down the line. . . . Since FLEET OWNER covers such a diversified number of industries, we feel confident that all executives, regardless of the line of business that they may be in, will find, in many issues, something of intimate interest to their own industry. . . . Texaco now is offering to send their publication, *Lubrication*, to all readers of this publication, on a monthly basis, without cost—just the same as FLEET OWNER is sent to you. . . . For your convenience, there is a coupon on page 5 of this issue. Need we say more?

Its Police Record helps you to end
ASSAULTS ON BATTERIES

WRITES FRANK MITCHELL
Captain in Charge, Police Garage City of Miami (Fla.) Police Dept.

"Up to the time when we installed these Bosch Volt-O-matic Generators we tried every possible scheme for keeping the batteries in our cars in a charged condition.

"We found it impossible to use any of the other types of generators which would satisfactorily cope with the situation, inasmuch as patrol cars are driven at so slow a rate of speed that the generators would not put out a high enough charging rate to take care of the load.

"We now have fourteen Bosch Generators in use and during the six months that they have been in use we have had absolutely no trouble with them. They answer our need in every respect."

IN most cases the real source of costly battery troubles and the resulting road breakdowns, delayed schedules, expensive repairs and replacements can be traced to abuses of the battery such as overcharging or undercharging.

To avoid these abuses hundreds of fleet owners are protecting their batteries by installing Bosch Volt-O-matic Generators, *which regulate the amount of current according to the changing needs of the battery.*

When the battery charge is low and the drain is heavy the Bosch Volt-O-matic Generator automatically sends a heavy charge into the battery.

When the battery is full and the current needed is small, it cuts down the current *automatically*, if necessary, to a harmless trickle.

At all times when the engine is running, the Bosch Volt-O-matic Generator itself—and *not* the battery—carries the load of current consumers . . . a revolutionary departure in the source of electrical current supply!

Results, too, are revolutionary . . . as the typical experience of the Miami Police Department (cited at right) testifies. Ask your Bosch distributor to prove similar benefits of the Bosch Generator to your own fleet . . . or mail coupon below for full information.

The makers of Bosch products have always taken pride in creating, designing, building and selling products superior to those commonly in use. Built to a high standard of quality, these products are proven leaders in their fields.

BOSCH *VOLT-O-MATIC* GENERATORS

DETACH HERE

UNITED AMERICAN BOSCH CORPORATION, SPRINGFIELD, MASS. SEND BOOKLET ON SUBJECTS CHECKED:

PRODUCTS manufactured by ROBERT BOSCH A.-G., bear trademark shown above. Sold by United American Bosch Corporation.

PRODUCTS OF ROBERT BOSCH A.-G.

- ☐ Bosch Volt-O-matic Generators
- ☐ Bosch Neverstall Windshield Wipers
- ☐ Bosch Semaphores
- ☐ Bosch Vibro-Balanced Horns
- ☐ Bosch Fog & Ditch Light

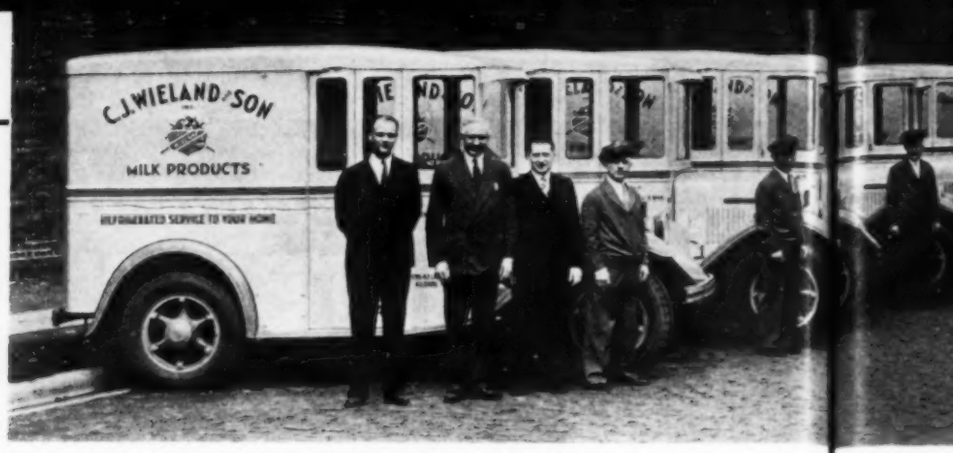
PRODUCTS OF AMERICAN-BOSCH

- American-Bosch Coils & Condensers ☐
- American-Bosch Car-Radio ☐
- American-Bosch Battery Chargers ☐
- American-Bosch Humidifiers ☐
- American-Bosch Home Radio ☐

☐ Pyro-Action Spark Plugs (25)

PRODUCTS manufactured by the UNITED AMERICAN BOSCH CORP., bear the trademark shown above.

TEAR OUT COUPON AND WRITE NAME AND ADDRESS IN SPACE BELOW



• NEW FLEET OF THIRTY (COUNT 'EM) UNITS OFFERS

REFRIGERATED M

· INAUGURATED · BY ·

HERE is a story that has news value, a vocational angle, and a certain amount of technical information. . . . It emphasizes sound merchandising methods, the trend towards the use of refrigerated bodies, and the advisability of outfitting each driver in a standard, company-owned uniform. . . . In other words, it's a swell story.—H. C. F.

C. J. WIELAND, of Chicago, whose progressive ideas have stimulated the development of many modern-day methods of handling and processing milk, notably the glass-lined tank truck and railroad tank car, has again clicked with something new and worth-while—a refrigerated house-to-house milk delivery truck.

On February 11th of this year Mr. Wieland inaugurated a new project by purchasing the Glenview Dairy Company, which operated thirteen routes on Chicago's north side. In the short period up to the time of this interview (May, 1935), he had built the business up to thirty routes.

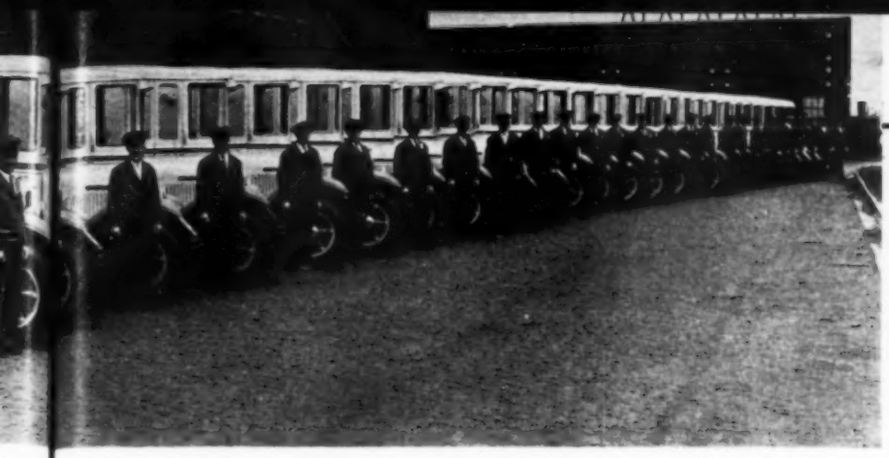
Several types of conventional light motor trucks were utilized on the thirteen routes when Mr. Wieland took over the Glenview Dairy Company. He quickly sensed the need of something new in delivery equipment. In his efforts to solve his new delivery problem, his thoughts repeatedly went back to the days when he was a wagon driver and to the hardships of the job, especially in the summer when the milk had to be packed in ice and it was impossible to keep his clothing clean or dry because most everything he handled was wet from the melting ice. Then too, he thought of the thousands of milk drivers of today who must submit to the same inconveniences.

Suddenly, the idea of a special refrigerated compartment, with dry ice as the refrigerant, occurred to Mr. Wieland. Always a man of action, he immediately broached the idea to H. A. Frick, manager of sales, the Chicago International Harvester motor truck branch, with the suggestion that such a refrigerated compartment be built into that Company's standard house-to-house milk truck. This is a specially designed truck with low driving compartment which permits the operator to drive while standing.

Mr. Frick in turn conferred with the engineers of his company and soon had them at work designing the refrigerated compartment that Mr. Wieland desired. Mr. Wieland then placed his order for thirty of these specially equipped M-2 house-to-house Internationals. They have recently been delivered to the C. J. Wieland & Son, Inc. plant in Chicago.

The refrigerated compartment built into each of these thirty trucks for C. J. Wieland & Son, Inc., is 58 inches wide, 52 inches high, and 54 inches deep and holds twenty-four cases of milk (twelve

• A CLOSE-UP OF THE MILK COMPARTMENT



NIT OFFERS "NEW DEAL" IN RETAIL MILK SERVICE

MILK DELIVERY

· CHICAGO · DAIRY ·

An Interview with

C. J. Wieland, Pres.,

C. J. Wieland & Son, Chicago, Illinois

bottles to the case). There are four refrigerator doors and a set of racks leading from each door, along which the cases are slid in and out. The two top doors open upward and the two lower, downward.

The dry-ice bunker is mounted on the top on a conductor plate which forms the ceiling of the refrigerated compartment. This bunker will hold 50 pounds of dry ice, which is sufficient to keep the temperature down to 40 degrees or lower on the hottest days.

During the first week of operation in May, twenty-five pounds of dry ice was sufficient and tests showed that temperatures down to 38 degrees were obtained. In cool weather a perforated retarding plate, made of rubber, is used to conserve the dry ice. In winter, it will also frequently be unnecessary to use dry ice, for the milk will then tend to retain the same temperature in the refrigerator compartment that it had when it left the cooler at the plant.

The entire outfit, including the doors and the ice bunker, is provided with a 3-inch layer of insulating material. There is also an inch-thick layer of insulating material in the roof of the truck.

Space is also provided under the refrigerated section for six cases of milk or for empty bottles. It is enclosed with sliding doors and may be utilized at the beginning of routes or in the early morning before the milk will change its temperature very considerably after leaving the cooler for the storage of additional cases of milk.

Space is also available on top for nine cases of empties. Cases of empties may also be carried in the front compartment with the driver; thus it is practically never necessary to return warm, empty bottles to the refrigerated compartment and so raise the temperature.

The big advantage in using a refrigerated compartment such as this is the fact that the milk can be delivered as cold and as fresh as it leaves the plant in a bottle that stays clean and dry. The wet, dirty cap with milk oozing out as the milk warms and expands, that so often prevails in the summertime when cases are ice packed, is obviated.

Then, too, there is the general cleanliness in handling the milk which makes it possible to have well-dressed, clean-appearing driver-salesmen which will make a real appeal to the housewife and enhance the men's effectiveness as salesmen. The C. J. Wieland &

• UNUSUAL ANNOUNCEMENT TELLS STORY

DAIRY-A-GRAM

To the Housewife of Chicago

Dear Madam: Here's news that will open your eyes (stop) C. J. Wieland today introduces to Chicago what is unquestionably the most sanitary and revolutionary method yet developed for distributing dairy products (stop) He is giving our great city its FIRST REFRIGERATOR TRUCK (stop) In fact employing a whole Silver fleet of REFRIGERATOR TRUCKS in the delivery of his company's Pasteurized Milk and other dairy products (stop) As an added modern innovation each of the trucks is manned by a courteous efficient salesman in FULL UNIFORM for the first time (stop)

See these new REFRIGERATOR Trucks for yourself (stop) Step out and ask the UNIFORMED C. J. Wieland & Son Inc. milkman how they work (stop) Let him explain how much cleaner they are as compared to old delivery methods (stop) How they will keep your Milk wholesome and improve its flavor by keeping it at a uniform cool temperature from the time it is bottled until it arrives at your doorstep (stop)

With hot summer days ahead just think what great comfort it will be to get your Milk and other dairy products COLD (stop) CLEAN (stop) FRESH (stop) RICH IN FLAVOR (stop) Get in on this exclusive REFRIGERATED DAIRY SERVICE today (stop) PHONE KILdare 9400.

C. J. Wieland & Son Inc.
4938-42 Lawrence Ave.

Son, Inc. drivers, for example, are dressed in natty, dark-gray uniforms, which would be quite impractical with the old, wet method of delivering milk.

Each truck is painted a very attractive silver aluminum, which is a good reflector of sun rays. Tests prove that in hot weather there is a difference of from 10 to 15 degrees in temperature inside from that outside when a vehicle is painted with this type of paint.

All Wieland drivers are outfitted in dark gray uniforms—pants, blouse, shirt, tie and cap, as shown above. The uniforms are dry-cleaned and pressed every ten days. . . . Mr. Wieland believes that uniforms on drivers pay big dividends in the form of advertising value, prestige and cleanliness in general. . . Note how the uniforms are "played up" in his sales message which appears on the preceding page.

Green is the contrasting color used and was obtained with a special mixture of blue and green—Wieland green it may be called. The running board and fenders and a 2-inch band across the middle of each side and the rear are painted this Wieland green.

The advertising message and the Wieland emblem are also in this green bordered with black. In the panel above the middle green band on each side of the truck the name of the concern is printed in large-sized letters, and below is printed the legend "Milk Products." Between the two is a large-sized reproduction of the Wieland emblem. Below the green middle band is the legend "Refrigerated Service to Your Door."

These trucks, veritable traveling billboards that they are, have already proved a most effective advertising medium for C. J. Wieland & Son, Inc. It is becoming a regular procedure for people to ask the uniformed drivers about the trucks as they stop to make deliveries and especially to inquire about the refrigerating facilities and then wind up by becoming customers. On the very day when the fleet photograph from which one of the accompanying illustrations was reproduced, two persons who were interested in the trucks became customers—each a two-quart-a-day customer as Mr. Wieland put it. The fact that the drivers are dressed in special uniforms is another feature that has real advertising value.

The trucks, themselves, are proven units. This type of unit is said to be approximately 25 per cent more efficient in saving time on frequent-stop routes than the conventional truck. Fleets of door-to-door trucks from 25 to more than one hundred are becoming numerous; in fact, there is a decided trend among city dairies to make all their deliveries, just as is being done by C. J. Wieland & Son, Inc., the speedy, efficient, and economical automotive way. Carefully maintained cost figures show that the cost of operating a unit of this type is very low—around 6 cents per mile, it is claimed. And where so large a percentage of the payload must go for drivers' wages, the milk-vehicle operating cost must be held down to a low figure to provide a profit.

Features of this type of door-to-door unit are easy handling, short wheelbase, accessibility of loading space, comparatively large load capacity, low driving-compartment floor, and extra-wide doors, all of which help to make speedier and more economical deliveries possible. In congested areas its short wheelbase and short-turning radius contribute to easy handling and easy parking.

In announcing the acquisition of their new fleet, specially equipped with refrigerated compartments, C. J. Wieland & Son, Inc. made use of an unusual circular which they call a "Dairy-A-Gram." It is reproduced in an accompanying illustration. Note how the refrigeration idea and the fact that "each of the trucks is manned by a courteous, efficient salesman in FULL UNIFORM" are played up. All drivers distribute copies of this circular to back doors of prospective customers over all their routes.

Another outstanding advantage in utilizing efficient, specially designed house-to-house delivery trucks equipped with refrigerated compartments such as these just purchased by C. J. Wieland & Son, Inc., is the pride and satisfaction evinced by the drivers in operating them. Their work is so clean compared with the old method of delivering milk. And then there is the greater comfort in driving, especially in the summer when by keeping the doors closed the temperature inside the trucks will be 10 to 15 degrees or more less than outside.

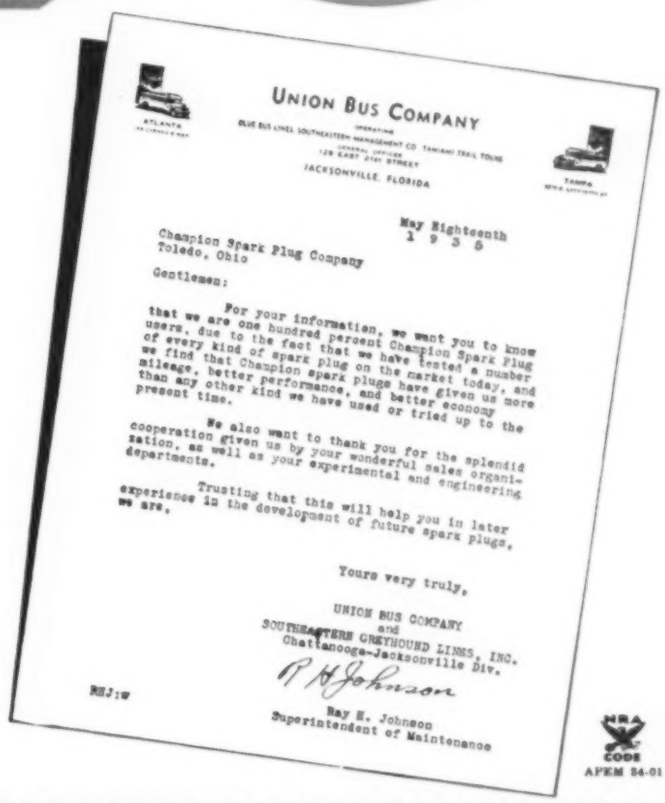
The result is that the drivers are imbued with a spirit of cheerfulness that just naturally helps them to be popular with regular customers and to keep them and to add new customers to their routes. Since the work is so satisfying, also, compared to the old way of delivering milk, it is possible to hold the better types of drivers.

(Please turn to page 63)

"More Mileage, Better Performance and Better Economy" with CHAMPIONS

USE THE SPARK PLUGS CHAMPIONS USE

Experienced bus operators, concerned with getting the most dependable spark plug and engine performance, specify Champions. The Champion sales organization in your territory, in cooperation with Champion factory engineers, stands ready to help solve your spark plug problems, and to help lower your operating costs. Champion makes a type of spark plug that will insure better performance for every engine and under every operating condition.



UNION BUS COMPANY

OPERATING
BLUE BUS LINES, SOUTHEASTERN MANAGEMENT CO. TAMIAMI TRAIL TOURS
GENERAL OFFICES
129 EAST 21ST STREET
JACKSONVILLE, FLORIDA

ATLANTA

TAMPA

May Eighteenth
1 9 3 5

Champion Spark Plug Company
Toledo, Ohio

Gentlemen:

For your information, we want you to know that we are one hundred percent Champion Spark Plug users, due to the fact that we have tested a number of every kind of spark plug on the market today, and we find that Champion spark plugs have given us more mileage, better performance, and better economy than any other kind we have used or tried up to the present time.

We also want to thank you for the splendid cooperation given us by your wonderful sales organization, as well as your experimental and engineering departments.

Trusting that this will help you in later experience in the development of future spark plugs, we are,

Yours very truly,

UNION BUS COMPANY
and
SOUTHEASTERN GREYHOUND LINES, INC.
Chattanooga-Jacksonville Div.

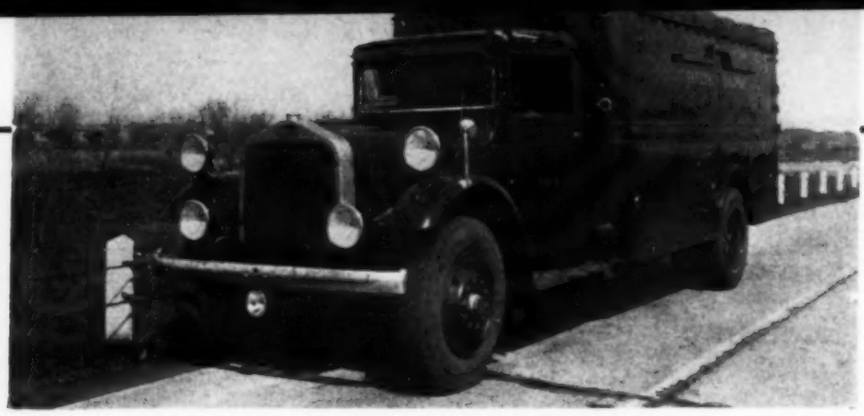
R H Johnson

RHJ:W

Ray H. Johnson
Superintendent of Maintenance

NRA CODES
APEM 34-01

TO KEEP ENGINES YOUNG • **TEST AND CHANGE SPARK PLUGS AT REGULAR INTERVALS**



1,300,000 Safe Miles at Night!

SUCH is the record of a fleet of five trucks of the type shown above, operated since 1929 on an overnight schedule, five nights per week. . . . Only six minor accidents were charged to their drivers, costing insurance companies the small sum of $242.00. . . . Here is the detailed story:

By E. I. Hibbard,
(Mail Truck Division)
General Electric Company,
Schenectady, N. Y.

WE have been asked by your Editor to give a detailed account of the safety record achieved by one of our fleets, consisting of five 6-ton trucks. Since we believe that these are the most completely equipped and the safest trucks operating on the highways today, and feeling proud of the record which we have thus established, we are glad to take this opportunity of acquainting other fleet operators with the various methods which have brought about this accomplishment.

Overnight delivery service was started by our Company on November 1, 1929, operating between Schenectady, N. Y. and West Lynn, Mass. In 1930, a similar service was inaugurated between Schenectady, N. Y. and Philadelphia, Pa., via New York City. Routes also covered by this fleet of trucks include such cities as Boston, Springfield and Pittsfield, Mass., Bloomfield and Newark, N. J., in addition to those mentioned previously.

Five trucks are used in this service. These are of 6-ton capacity (most anyone can guess the make), and we believe that their equipment is as complete as possible, as you will note from the above photograph. They operate five nights each week and each truck covers approximately 1,150 miles per week, or approximately 60,000 miles per year per truck.

Since the inauguration of this service, this fleet of five trucks has covered 1,300,000 miles—all of which were run at night—and our drivers have been responsible for only six minor accidents; these accidents costing our insurance companies but $242.00. In fact, during the year recently ended (1934), this fleet covered 240,000 night-miles without one single accident chargeable to the driver.

Of course, we are convinced that safety work pays. We believe not only in hiring the best driving talent obtainable, but also in equipping our vehicles with practically every safety device that will contribute to accident-free performance. The following 8-point safety-plan will roughly outline some of the safety measures we have taken.

1. Safety Before Schedules.—We insist that safety comes first; schedules are a secondary consideration.

2. Maintenance.—We have a preventive maintenance system in effect, and in addition to that may be mentioned the following:

(a) Daily inspection of trucks by competent mechanics.

(b) We insist that each driver check his truck before he leaves his terminal and at regular intervals en route, to make sure of the gas, oil and water supply, tire pressure, lights, brakes, horn, etc.

(c) These trucks are governed at 40 miles per hour.

3. Lighting Equipment.—Each truck is equipped with two sets of headlights, one set being directly connected to the battery, with special switch in cab for emergency use. Each truck is also equipped with two ditch or fog-lights located below the bumpers. There are also two marker lights on the front of the body (at the top) and two at the rear. There are also three "passing" lights located along the scrub-rail of the body on each side. In addition, there are two stop-and-tail lights at the rear of each truck, as well as suitable and effective reflectors.

4. Tires.—Our tire maintenance program includes the following:

(a) Daily inspection of tires to remove foreign matter and to check air-pressures and alignment.

(b) Placing of new tires on the front wheels, removing them to the rear wheels after 15,000 miles of use.

(c) Removal of all tires from rims every 15,000 miles, to make possible a complete inspection of tires and rims.

5. Cab Equipment.—Each cab is equipped with the following safety equipment:

(a) Buzzers in cabs, to warn drivers when the air-pressure for air brakes gets low.

(b) Air-operated windshield wipers.

(c) Heaters of the hot-water type for cabs.

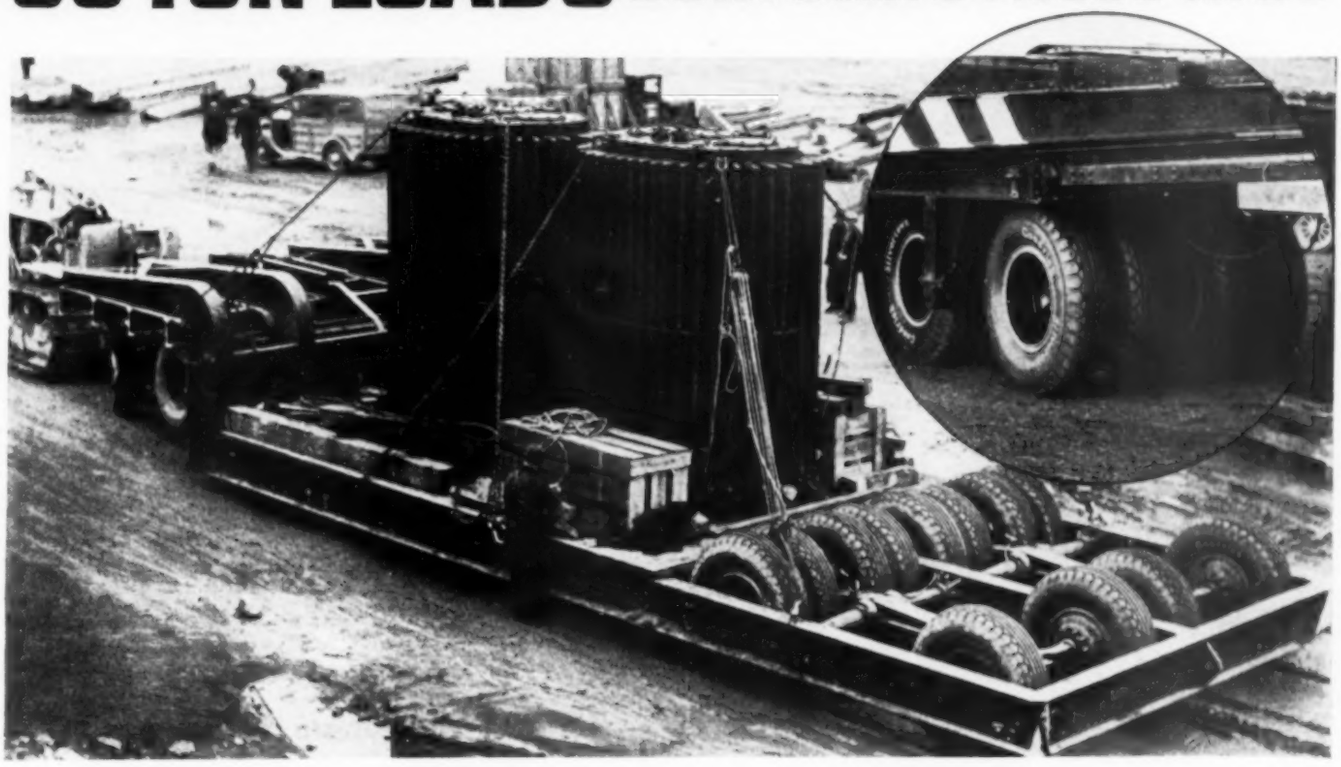
(d) Windshield heaters.

(e) Fire extinguishers.

(f) First-aid kits.

(Continued on page 69)

80-TON LOADS *Don't Scare These Tires*



NEW TYPE TRUCK TIRES USED ON GIANT 20-WHEEL TRAILER AT GRAND COULEE DAM

They had a tough transportation problem at Grand Coulee Dam. Heavy equipment and materials had to be hauled 30 miles or more over rough roads to the site of the dam. It takes a crawler tractor to supply the power!

So the contractor built what is believed to be the world's largest trailer. Built for loads up to 60 tons. The trailer itself weighs 20 tons.

To carry this gigantic load they use the new Triple Protected Silvertowns—the tires that have proved themselves on the hardest hauling jobs in the country!

These new truck tires have a revolutionary invention incorporated in the sidewall. The invention actually checks 80% of premature failures. It means that tires stand up longer under the battering, bruising punishment of construction work.

Tires that carry 80-ton loads at Grand Coulee will handle *your* job right, too!

One tire failure on an important job may cost you hours of delay—men and equipment idle—a big repair bill. Why not play safe? Get the tire that's just as strong in the sidewall as it is under the tread! Here's how triple protection works:

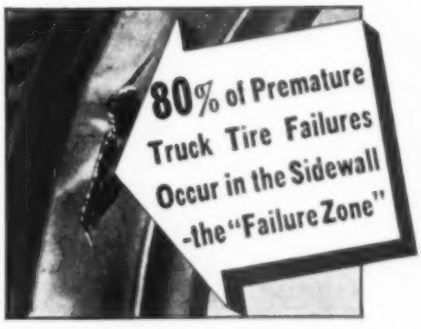
1 **PLYFLEX**—a *new*, tough, sturdy rubber material with greater resistance to stretch. A layer of Plyflex in the sidewall prevents ply separation—distributes stresses—checks local weakness.

2 **PLY-LOCK**—the new Goodrich way of *locking* the plies about the bead. Anchoring them in place. Positive protection against the short plies tearing loose above the bead.

3 **100% FULL-FLOATING CORD**—Each cord is surrounded by rubber. With ordinary cross-woven fabric, when the cords touch each other, they rub—get hot—break. In Silvertowns, there are no cross cords. No friction.

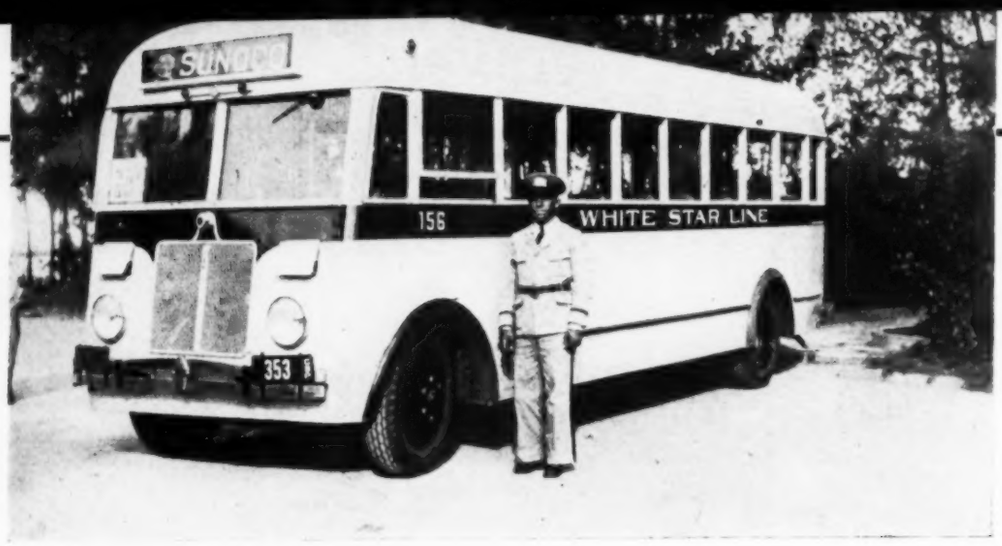
FREE! **44-PAGE HANDBOOK FOR TRUCK OPERATORS**

Every truck owner, every driver should have this big 44-page handbook. Gives commodity weights, tire load capacities, inflation schedules, dual spacing chart, load analysis and other useful information. No obligation. Write for free copy. Dept. T-69, The B. F. Goodrich Company, Akron, Ohio.



Goodrich *Triple Protected* Silvertowns

SPECIFY THESE NEW SILVERTOWN TIRES FOR TRUCKS AND BUSES



Yes! We HAD No Rubber Fenders

"WHEN we tried to buy them it was difficult to locate anyone who knew what we were talking about. . . . So we made our own, as outlined in this article, rather than tie up a fleet of 40 brand new buses, one of which is pictured above."

By S. D. McMurray,
Assistant General Manager,
White Star Bus Line, Inc., Hato-Rey, Porto Rico

SOME months ago, when working out the body details for building in our affiliated body plant, a fleet of forty all-aluminum, 30-passenger, transit-type coaches, which we have just finished and put into service, we were quite perplexed with the problem of providing rubber mud-guards to go around the edges of the front and rear wheel-housings.

We contacted several business friends, and two or three coach builders and rubber manufacturers, but without satisfactory results. We had spent several dollars on air-mail letters, and the first few of the coaches were almost finished, and we had not yet even located anyone who knew what we were talking about—much less someone who was able to supply our needs at once.

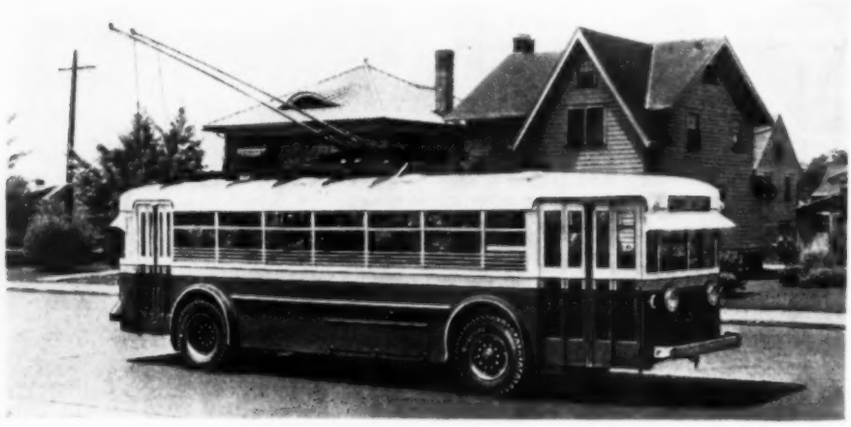
Faced with the picture of having a whole fleet of brand new coaches tied up in the garage, waiting for a comparatively insignificant unit — rubber fenders — this was too much for our general manager, Mr. Rafael Arcelay de la Rosa—a very resourceful man, as all good bus operators must be, particularly when they are several weeks away from the nearest source of parts supply. So he went into a huddle with our tire department's vulcanizing expert.

The result of this "huddle" was that in a couple of days we had rubber fenders (we call them mud-guards) for those buses which were already finished, as well as a steady stream of mud-guards, sufficiently numerous to equip the rest of the coaches which were being turned out at the rate of one every two days.

As proof of the fact that these home-made mud-guards are attractive and serviceable, witness the picture of the coach that appears at the head of this article, which carries one of the products of our own ingenuity. Here is how we did the trick:

In making these rubber mud-guards, we first selected a discarded tire—usually an 8.25 x 20—that had good side-walls. We then removed all the rubber with an electrically-operated rotary wire brush, right down to the fabric, and removed the two beads as well. Then we glued a 3/16-inch cord around the two shoulders of the casing. Next, from the center of the tire, down over the 3/16-inch cord, on down over the edge from which the bead was cut, and back up to almost the center of the inside of the tire, we glued a sheet of smooth gum rubber.

(Please turn to page 65)

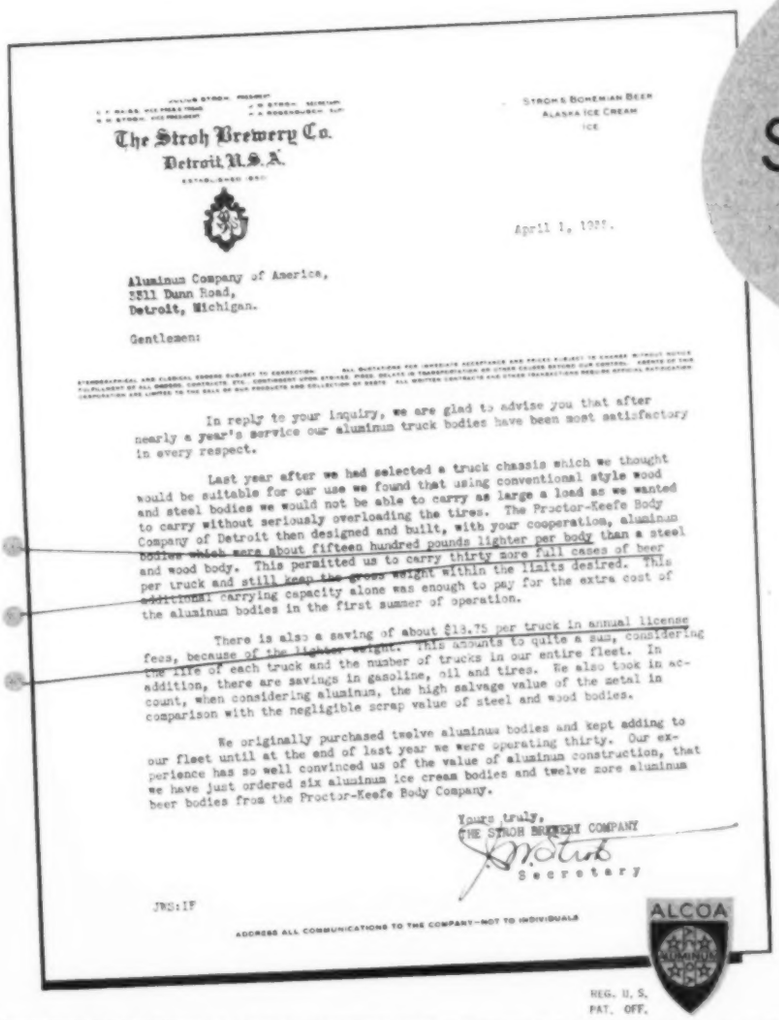


And here is the factory-made type rubber fender mounted on the Twin-Coach trackless trolley, as used by leading cities. Firestone makes these rubber fenders, just in case you are the least bit curious. Their address? Akron, Ohio.

"Aluminum Bodies Save Money"

Stroh's

SAY IT 42 TIMES WITH FIGURE FACTS



The Stroh Brewery Co.
Detroit U.S.A.

STROH'S BOHEMIAN BEER
ALASKA ICE CREAM
ICE

April 1, 1935.

Aluminum Company of America,
2511 Dunn Road,
Detroit, Michigan.

Gentlemen:

In reply to your inquiry, we are glad to advise you that after nearly a year's service our aluminum truck bodies have been most satisfactory in every respect.

Last year after we had selected a truck chassis which we thought would be suitable for our use we found that using conventional style wood and steel bodies we would not be able to carry as large a load as we wanted to carry without seriously overloading the tires. The Proctor-Keefe Body Company of Detroit then designed and built, with your cooperation, aluminum bodies which were about fifteen hundred pounds lighter per body than a steel and wood body. This permitted us to carry thirty more full cases of beer per truck and still keep the gross weight within the limits desired. This additional carrying capacity alone was enough to pay for the extra cost of the aluminum bodies in the first summer of operation.

There is also a saving of about $18.75 per truck in annual license fees, because of the lighter weight. This amounts to quite a sum, considering the size of each truck and the number of trucks in our entire fleet. In addition, there are savings in gasoline, oil and tires. We also took in account, when considering aluminum, the high salvage value of the metal in comparison with the negligible scrap value of steel and wood bodies.

We originally purchased twelve aluminum bodies and kept adding to our fleet until at the end of last year we were operating thirty. Our experience has so well convinced us of the value of aluminum construction, that we have just ordered six aluminum ice cream bodies and twelve more aluminum beer bodies from the Proctor-Keefe Body Company.

Yours truly,
THE STROH BREWERY COMPANY
Secretary

JRS:IF

ADDRESS ALL COMMUNICATIONS TO THE COMPANY—NOT TO INDIVIDUALS

This letter "says it" in no uncertain terms. Strohs originally ordered a fleet of 12 trucks equipped with Aluminum Bodies. They added one after another until at the end of 1934 they had 30 in operation. A recent order gives them a total of 42 beer bodies and 6 Aluminum ice cream bodies.

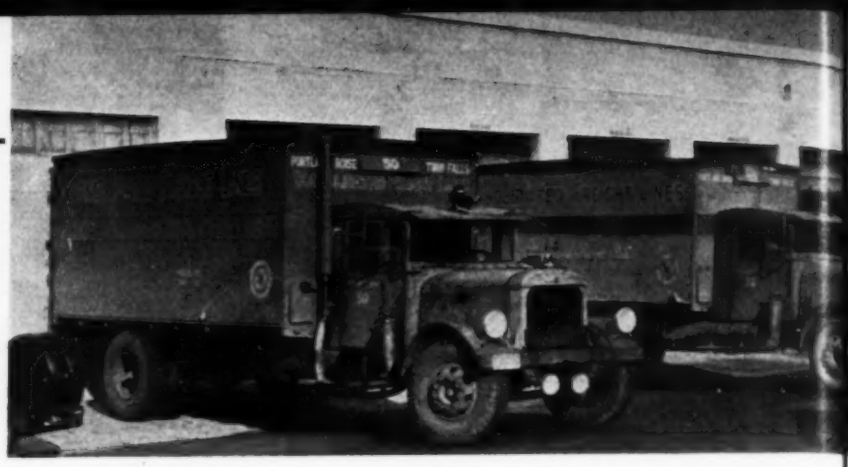
Many more FIGURE FACTS, which point to savings in truck operation, will be found in our book, "Alcoa Aluminum for Truck Bodies." When may we send you a copy?

ALUMINUM COMPANY OF AMERICA
1861 Gulf Building, Pittsburgh, Pa.

ALCOA

REG. U. S. PAT. OFF.

ALCOA · ALUMINUM



• FIFTY-FOUR DIESEL JOBS IN THIS FLEET

DIESELS PROFITABLE IN FR

· OUR · WESTERN · COR SPO

YOU asked for it, so here it is . . . . Recently we "surveyed" our readers, asking them what was desired, editorially. Most of them replied "Dope on Diesels" . . . . So our correspondent, Mandus Bridston, secured a REAL experience story for you . . . . How's that for service?—H. C. F.

NOT only is the Consolidated Freight Lines, Inc., of Portland and Seattle, one of the largest truck freight operators in the West, but it is also one of the most progressive in adopting the newest developments in motor transportation. And this concern not only is quick to adopt the proven developments of "the other fellow," but does a large measure of development on its own.

A visit to this plant revealed a number of money-saving and labor-saving methods that should be of real value to similar operations elsewhere, particularly the adaptation of Diesel engines to fifty-four of their large trucks, and to which the major portion of this article will be devoted.

This concern hauls freight over 4,500 miles of lines with 175 major road units and an equal number of accessory units, covering territory between San Francisco in the South; Helena, Montana in the East; and Seattle, Washington, in the North. In addition, this company has connections with feeder and extension lines that virtually doubles this coverage, extending to Denver, Colorado and Billings, Montana. Its fleet covers some 20,000 miles per day.

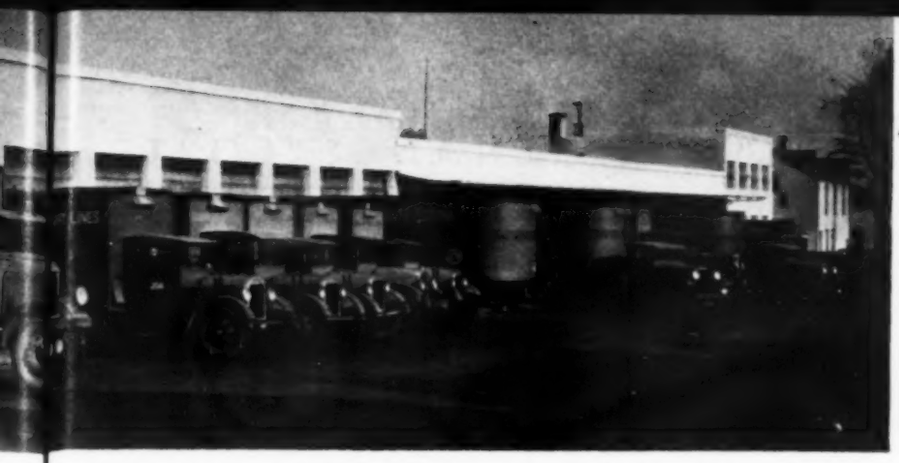
There are several interesting phases to this fleet operation, but B. E. Birun, divisional manager and secretary of the organization was particularly eloquent about their experience with Diesel engine operation. Mr. Birun is one of the founders of the company, which is a merger of two Pacific Northwest freight lines. In 1919 Mr. Birun began operating the Federal Auto Freight out of Yakima, Wash., and in 1929 his concern merged with a line in Portland, Oregon, operated by Leland James, who is now president of Consolidated Freight Lines.

"We began experimenting with Diesel fuel in 1933," Mr. Birun reports, "using the 125 HP Cummins motor which we installed in some of our regular equipment. We did this transferring of motors in our own shops, which are equipped to do all our maintenance work. In fact, our shop has actually built several trailers as well as trucks from the ground up, by utilizing parts from discarded units.

"With our Diesel experiment we worked very closely with the engine manufacturer and as a result we were able to recommend several refinements that have improved our Diesel operation immeasurably. At the present time we have 54 trucks with Diesel motors, all hauling the maximum loads permissible, ranging from 49,000 pounds to 68,000 pounds gross, varying with the states in which we are operating. Our standard unit consists of a 6-wheel truck and a 6-wheel trailer. By the end of this year we expect to double the number of Diesel motors in our fleet.

"Of course, the primary purpose of this change was to reduce our fuel costs, and this we achieved to the extent of a 25 per cent re-

• LOADING AT THE SEATTLE TERMINAL



FLEET • HERE ARE A FEW OF THEM

FREIGHT-HAUL OPERATION

RESPONDENT · REPORTS ·

duction. Operating factors with Diesel power are the same as with gasoline and, if anything, our drivers report that the 'lugging' ability of the Diesel is superior to gasoline.

"However, in addition to the saving in fuel cost, we find that the new motors require *less* maintenance expense — no ignition trouble, fewer moving and wearable parts to give trouble, and those all removable. Roughly the maintenance cost is cut in two, which more than compensates for the greater capital investment required to make the shift from gasoline to Diesel.

"We put our drivers on the Diesel trucks overnight, you might say. A few hours spent in the shop to learn the essentials and the men were ready to take out the trucks on regular payload routes.

"The switching of the motors required no major changes in the trucks. However, we did put in larger transmission units than used with the gasoline motors, but the greater efficiency of the larger transmission and the longer life realized equalizes the added cost."

So much for the Diesel experiment. This concern overlooks few bets in keeping down operating costs. For example how small leaks are plugged. The gasoline motors used in this fleet have removable sleeves. When pistons get worn, or cylinders need a rebore, the sleeves are pulled out, and new sleeves installed pronto without delay in road operation.

However, the old pistons are not thrown away. They are refinished to fit another motor with cylinders less worn, to make a perfect fit. Thus pistons may sometimes be used three or four times.

Equally noteworthy is the method used by this concern to cut down the cost of rubber, which has been reduced fifty per cent or better. The life of their tires has been increased about 150 per cent by means of an economical method of retreading, which Mr. Birun referred to as "recapping."

Tires are inspected regularly at all division

An Interview with

B. E. Birun, Div. Mgr.,

Consolidated Freight Lines, Inc.
Portland, Ore. and Seattle, Wash.

points, where tire repair crews are busy around the clock. Wheels are all jacked up and all tires are examined for bruises, imbedded rocks, etc. If the slightest bruise is noted, the tire is removed; the bruise is then vulcanized with raw rubber.

However, when the treads become worn, major tire repair work begins. The tire is given a new lease on life by "recapping." This consists of a thorough buffing of the tire on a specially designed machine. This gives the tire a very rough surface, cleans all surface dirt and prepares the tire for the recap. This consists of a rubber strip one-half inch thick and the width of the tire. This is cemented to the tire as a base for the new retread.

Then the tire is placed in a mold with 100 pounds of air

(Please turn to next page following)

• UNLOADING AT PORTLAND, OREGON

DIESELS CUT FUEL AND MAINTENANCE COSTS

(Continued from preceding page)

pressure. In addition, from 40 to 60 pounds pressure of steam is applied in the mold which virtually "cooks" the recap right onto the old tire, and also grooves a series of treads paralleling the tire. Cross treads are made after the tire has been removed from the mold, by another specially designed machine. The tire remains in the steam mold two hours.

By this means a tire may be "recapped" several times, almost doubling the life of the tire after each renewal. Mr. Birun also pointed out that this enables the operator to provide the kind of tread, either hard or soft, that best fits the particular territory in which a truck operates.

This recap equipment is provided at each of the division headquarters, and at each shop and an average of 8 tires are recapped per day. Some 25 tires per day go through the shop for minor repairs.

The loading platform and warehouse arrangements at divisional points, illustrated within this article, are particularly adaptable to handling of freight. The platform and floor, at truck level, extend the entire length of the building, open at both sides. Incoming trucks unload at the street front, while loading is done under roof at the other side of the platform with entrance and exit at the alley.

This avoids all confusion of incoming and outgoing freight, reduces the handling of merchandise to a minimum, and also enables the mechanics to inspect and repair the trucks during the loading process with no delay in operating time. As a rule trucks come in at each division point in the morning and leave during the evening, for night haulage is found most satisfactory.

Another innovation at division points is the facility for weighing outgoing loads. A large platform scale is provided so that there is no guess-work about payload weight. Thus all conflicts with state weight regulations are avoided, and yet the trucks can all be loaded to the permissible capacity. Of course, this eliminates a lot of argument and delay on the road by highway patrolmen, and forestalls a great deal of unnecessary inspection of weights.

Business with this concern is definitely on the increase, the company expecting a 30 per cent increase in volume this year over last year. With operating costs pared to the bone, this company shows a consistent operating profit. After all, profit is as likely to be found on the *cost* sheet as it is on the bill of sale.

Latest figures available indicate that Consolidated Freight Lines operates their various pieces of equipment over 4,273 miles of highway. Two types of chasses are used—Kenworth and Fageol—both of which are manufactured on the Pacific Coast.

Bodies for these trucks and trailers, as a rule, are built in two sizes—16 feet and 22 feet—in the Consolidated Freight Lines fleet. The width and height are standardized at 7 feet, 6 inches; and 6 feet, 4 inches.

An interesting feature of Consolidated's bodies is the provision which has been made for heating during cold weather. Hot-water heaters, operating from the cooling systems of the motors are used.

All bodies, of course, are built from the ground up, and maintained right in the company's own shops.

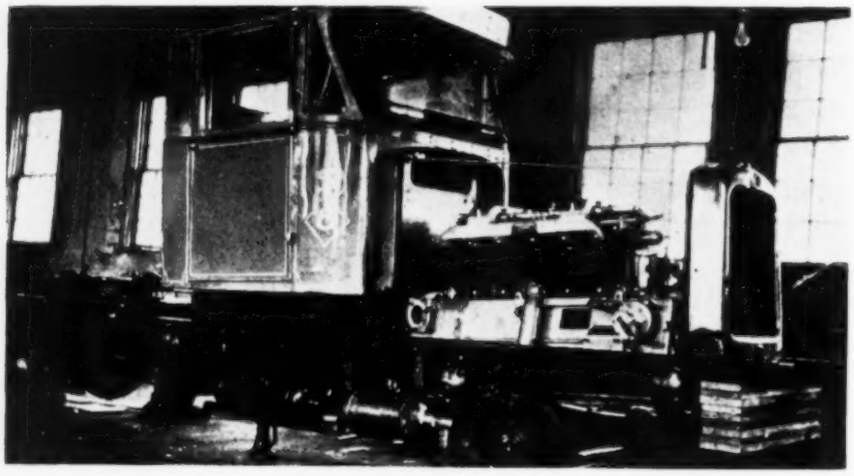
Since the point farthest east on the Company's routes is Helena, Montana, and lines extend to San Francisco, Seattle and Portland, as well as Twin Falls, Idaho, temperatures over such an extensive trucking network, as well as weather conditions, vary greatly. Executives of the Company state that it is not unusual that they encounter temperatures from 40 degrees below zero, to 110 degrees above.

For this reason, a great many insulated and refrigerated bodies are used, the latter of which will be found particularly interesting to those hauling perishable products.

Some of the bodies more recently added to the fleet are refrigerated with ice and brine to maintain temperatures between 40 degrees and 50 degrees in the warmer climates. Two inches of Dry Zero insulating material are used in the roof, sides and floors.

Bodies are finished with 4-ply veneer and 22-gauge galvanized sheet metal of the auto-body steel type.

(EDITOR'S NOTE: This is the first of a series of articles in which facts about Diesel operation will be given. While this first article is rather general, it is our intention to delve more deeply into the subject and dig up some *real* cost figures which will give you the answer to the question, "Have Diesels Arrived?" . . . Watch for these articles in forthcoming issues.—H. C. F.)



THE trend towards Diesel power is unmistakably widespread. Even up in Canada they are doing it, as you will note from this picture, snapped in the shop of a leading fleet . . . They have already "converted" five units of this type, using Diesels of British manufacture, and nothing but satisfaction and success is reported . . . The job being repowered is a big G.M.C. tractor . . . Be sure and read Consolidated Freight Lines' experience with AMERICAN-MADE Diesels, in the accompanying article.

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The economies of trouble-free performance and low maintenance cost explain the popularity of Simmons Silver King Jacks among fleet operators everywhere. The proofs—in cold facts and figures—from some of the largest operators in the country are available for your comparison. You, too, can save money and costly delays by standardizing on Silver Kings.

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Send for the complete Simmons Silver King Catalog which pictures and describes in detail each Jack in the Simmons line. Whatever your requirements may be, you will cut costs and save time with a . . . . .
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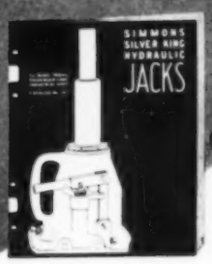

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CITY STATE

Color Combinations *for* Trucks

IF your vehicles are not painted in a definite color-scheme. . . . Or, if you are thinking of changing your present colors. . . . This article, prepared by an "exterior decorator" will be found interesting and helpful.—Editor.

SUCCESS or failure in a color scheme for commercial vehicles is dependent upon the color balance, and also upon the order in which colors are employed, whether it be a truck for heavy-duty service, or a light delivery unit, the Duco Advisory Service has ascertained after intensive investigation. Through the use of colors, cars for commercial purposes can be made to appropriately reflect the business they represent.

There are some generally defined rules in the coloring of all vehicles, that should be applied in every case. For instance, a small area of a bright color balances a large area of a subdued color. Hence, in commercial vehicle coloration, equal areas of dark and light colors on the body appear disturbing to the eye. They lack repose and appear disjointed. For this reason, it is satisfactory to employ light, bright colors for stripes and lettering accents against a darker color on the other body parts, or vice versa.

Colors should follow in natural order. Reverse this natural order, and the colors involved will appear weak and characterless in combination. There can be no color harmony in color arrangements in which the natural order of colors has been ignored.

Here are three ways of combining colors for commercial vehicles. Any one of them will prove effectual and appealing:

First — Agreeable combinations of colors in which the same basic hue is dominant, such as light tan with a dark tan, or a pale blue in combination with a darker blue. Second—Agreeable combinations of colors that contain some common hue, such as blue-green in combination with green, or yellow in combination with yellow-red. Third—Agreeable combinations of colors representing opposites, such as purple with green-yellow, or red with blue-green.

Here are four methods of achieving effective contrast effects with color:

(1) Warm colors contrast with cold colors. The warm colors are red, yellow-red, yellow and green-yellow. The cold colors are green, blue-green, blue and purple-blue. Purple is dependent upon its blue or red content as to whether it is a warm or a cold color.

(2) High value colors contrast with low value colors. A high value, weak chroma yellow-red-yellow (beige) contrasts with a darker value of the same chroma strength and hue (brown).

(3) Weak and strong chroma strengths, provided the hues employed follow the natural order of colors and the rules for harmony, contrast effectively.

(4) A color contrasts with its complement. By taking colors in pairs as direct opposites, a complete range of this type of contract is obtained.

Taking more specifically the various fields in which trucks are used, it is found that gas and oil trucks look appropriate in flame colors, such as bright reds, orange or yellow. If red is the color, then bright chromium lettering and ornamentation is suggested. If orange is the base color, then blue will contrast nicely. If a light orange is used, then a dark blue should be used for lettering, and if a dark orange is used, then a light blue will serve best.

In no more practical way can the laundry fleet owner express the quality of his services and identify them, than by a use of appropriate color. Blue is a characteristically clean color, so it is for that reason that crisp, clean blues are suggested as the colors best suited for laundry pick-up and delivery cars. Yellow, cream or white can be used with blue, but they have been used so much that they look a little old-style on modern delivery units.

A good color for the laundry fleet is a blue with a purple content that combines very happily with goldenrod, a very high-value strong chroma yellow-red-yellow. A blue-green-blue can be employed if desired; this color will look most unusual and attractive when combined with an accent note of its contrasting hue, a brickdust red. The contrast effect will be still further carried out if letters in brickdust red are outlined with fine lines of silver.

Ice cream trucks are reflective of their function when festive party

(*Please turn to page* 65)

WHITE DEPENDABILITY TRAILER FLEXIBILITY

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● To get the most out of semi and four-wheel trailer operation you must have a tractor that can stand up under the extra loads and steady grind common to this type of service.

In the most gruelling work, in every conceivable kind of business, White tractors are proving daily that they have the extra power, speed and dependability for hauling greater payloads on the most exacting schedules, at lower cost.

22 to 24 hour daily schedules are the common thing for many White tractors—and many large operators say they can conservatively write off the cost of White equipment over 250,000 miles of service. Cost records, in one typical operation, showed that a White tractor semi-trailer fleet covered almost 22 million miles with a repair and maintenance expense of less than one cent per mile!

Many tractor-trailer combinations require specially engineered units for lowest cost, most efficient operation. The benefit of the experience White has gained through thirty years of solving transportation problems is yours for the asking.

The complete line of Whites has the right unit for every job, starting at $1195 (chassis at factory); ranging from 8,000 to 40,000 lbs. gross and including 4 and 6 wheelers, trucks and tractors.

For full information see your White Branch or Dealer or write The White Motor Company, Cleveland.

White TRUCKS

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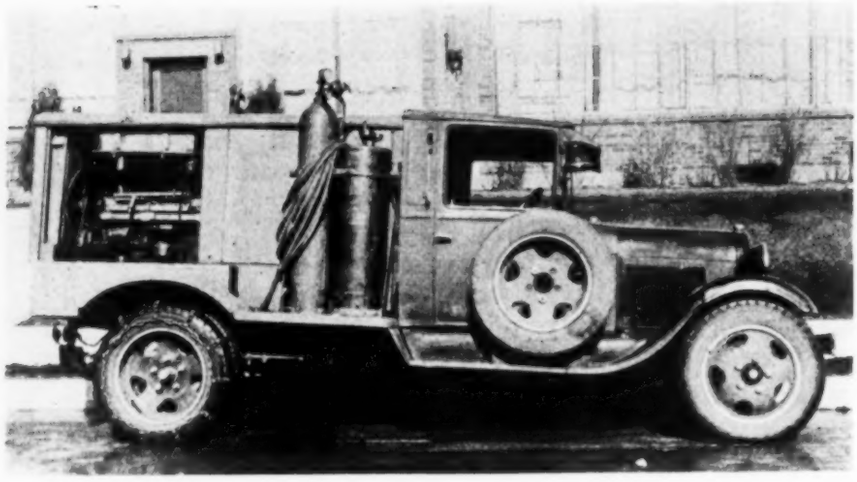


An Interview With
E. J. Graham,
Supt. of Transportation
Colorado Public Service Company,
Denver, Colo.

« Maintaining a 250-Unit

DESPITE the handicaps occasioned by a wide variation in territory covered and by a large assortment of automotive equipment, each with special usages, the fleet of the Public Service Company of Colorado, consisting of about 250 cars and trucks, is one of the most efficiently and economically operated and maintained in the entire West.

This fleet is headquartered in their Denver (Colorado) garage, a 175-foot by 220-foot structure, and one of the most modern in the country. Before it was built, E. J. Graham, Superintendent of Transportation, inspected numerous fleet garages throughout the country, and picked up the best ideas here and there, for inclusion in the structure. Hence, the building itself is sort of a "composite" of efficiency, representing the entire United States.

Because many of the Company trucks operate too far away from Denver to be stored or serviced there, such units are moved into local garages in the towns nearest to which they operate. In cases of this kind, the Company rents space from the local dealer representing the particular make of truck used. This arrangement covers not only storage, but also the privilege of using dealer service equipment when necessary. The dealers are very glad, usually, to make this arrangement, since the space brings in revenue and leads to the replacement parts and new car business of the Company in their own territories.

The service work itself, however, is taken care of by Public Service Company's own men. The utility retains a crew of three traveling mechanics, who devote their entire time to touring the territory covered and working on cars and trucks in use at the various locations.

The traveling mechanics plan to inspect every unit at least once in three months. A traveling painter also works on the same basis, covering each district about once a year.

The dealer-garage arrangement benefits the fleet mainly in use of heavy equipment such as overhead tracks, lifts, hoists, etc. Generally speaking, the Public Service traveling mechanics have a more complete stock of tools than the dealers have. Each man carries about $600 worth of Company tools, in addition to his own personal equipment.

The traveling mechanics each use one-ton panel trucks, one of which is illustrated, which are designed so that they can be put into emergency service for most purposes. When a mechanic comes into a town, he picks out the truck that needs the most urgent service, and brings it into the shop. After unloading his road truck, the mechanic lets the regular driver use his truck. Thus, service is never interrupted.

The traveling mechanics make complete weekly reports of the work they have done. By checking these reports, Mr. Graham can judge from what was done on the previous trip, what should be done on the next one. Thus, all effort is carefully planned for the mechanics before they start out, and lost motion is eliminated.

While this Company won't hire anyone but general utility men having had plenty of experience, Mr. Graham has found that it pays to have them specialize to a certain extent. One man is kept busy on the motors of light cars. Another one devotes his time to rebuilding heavy motors. A third works almost entirely on the differentials and transmissions of light trucks.

With this system, the men not only become thoroughly experienced in one line, with the result that they are able to do this work

DRIVER'S DAILY REPORT

Date ..... 193 ... Today
Truck No. ..... O.D. Reading Yesterday
Rep. Order No. ..... Mileage

NOTE: THAT PART OF TRUCK NOT WORKING PROPERLY IS TO BE MARKED (X). THE DRIVER IS TO WRITE GENERAL TROUBLES AND NOTES UNDER "REMARKS."

AXLE FRONT	CLUTCH SLIPS	FLOOR BOARDS	SPRING REAR
AXLE REAR	CLUTCH CHAOS	HORN WON'T BLOW	STARTER
BATTERY	DIFFERENTIAL NOISY	RADIATOR HOSE	STEERING
BAND LOW LEAK	DIFFERENTIAL OIL LEAK	IGNITION	SWITCH
BAND REVERSE	MOTOR NOISY	LIGHTS	TIRES
BRAKE FOOT	MOTOR RADIATES	ODOMETER	TRANSMISSION NOISY
BRAKE HAND	FAN	OIL PUMP	WHEELS
BODY	FAN BELT	RADIATOR LEAKS	WATER PUMP
CARBURETOR	FENDERS FRONT	RADIUS RODS	WINDSHIELD
CHAINS	FENDERS REAR	SPRING FRONT	WIRING

REMARKS

Driver .....

HERE'S a large fleet that's partly decentralized. The problem of how to keep the far-away vehicles in good order was solved by appointing three "itinerant" mechanics, who use service-trucks to keep in touch with and maintain them. The local fleet, of course, is very modernly maintained. You'll read about both methods in this article.

Public-Utility Fleet »

more quickly and efficiently, but also have responsibility centralized in them. If anything is wrong with a light car transmission, there is only one place for the blame to fall. This keeps the men on their toes to be sure their jobs are well done.

Standard bodies are used on light equipment, but all heavy bodies are specially built in the Company's shop. One man devotes all of his time to this work. This not only saves money but also makes possible quicker service. A special body can be built here in much less time than would be necessary for having it made outside or in ordering it from the East.

With the mechanical improvements in light cars and in general road conditions, this Company has found it possible to replace a great deal of heavy equipment with light trucks—almost 50% of it in fact. Decided savings in both operation and labor costs have resulted. For instance, with certain old-type, heavy equipment, it used to require two days for a mountain run of 350 miles from Denver. Now, with high-speed trucks equipped with auxiliary transmissions, the same run is made in 12 hours. Since six to eight men costing one dollar per hour each, are used on each truck, the labor saving is of major importance.

The Public Service Company believes in keeping its equipment up-to-date as far as possible, since the maintenance costs on obsolete trucks are often prohibitive. However, it doesn't figure trade-ins on a mileage basis. The condition of the unit and its ability to do the job required are the main factors considered. One unit may be traded in at 50,000 or 75,000 miles and another at 200,000 miles.

The Company drivers are advised to follow a strict "hands off" policy as far as working on equipment is concerned. Mr. Graham finds that an inexperienced man can do more harm than good. However, on his daily mileage report, (illustrated) the driver is required to note down any difficulties he has had with the equipment. The form is printed with practically all things that can go wrong so that he has only to check the difficulty —*not* write it out. This encourages full cooperation from the men.

Another unusual phase of service is a plan of greasing every unit once a week. Mr. Graham finds that costs are lower this way than when an attempt is made to figure greasing on a 500-mile basis. Further, all chances of damage due to lack of grease are eliminated.

An exceptionally handy greasing setup is used. In the garage is one huge pit 16 feet long. All the different greases used are piped into it so that a man can get the proper gun for any need without

(*Please turn to page* 56)

SHOP REPAIR SCHEDULE

DATE	REPAIR ORDER NO.	O. D. READING AT TIME OF REPAIRS	VALVES	RINGS	RODS	PIT PISTONS	CLEAN AND ADJ. IGNITION	FLYWHEEL GEAR	REBUILD TRANS.	REBUILD CLUTCH	INSTALL SPARE MOTOR	REBUILD MOTOR	INSTALL SPARE TRANSMISSION	TIGHTEN MAIN BEARINGS	INSTALL RADIATOR	REBUILD GENERATOR	REBUILD STARTER			RELINE BRAKES	ADJUST BRAKES	FRONT END REBUILD	REBUILD STEERING	REBUSH SHACKLES	INSTALL SPARE SPRING	REBUILD DIFFERENTIAL	INSTALL CROSS MEMBER	STRAIGHTEN FRONT AXLE	INSTALL SPRING	INSTALL FENDER	REBUILD SHOCK ABSORBERS	INSTALL FRONT AXLE ASSEMBLY	STRAIGHTEN FRAME	INSTALL BATTERY			COMPLETE REBUILD	INSTALL SPECIAL EQUIPMENT	RE-WIRE		REMOVE BODY	REPAIR BODY		PAINT	EQUIP NEW TRUCK	ACCIDENT

TRUCK NO.	
MAKE	
DEPT.	
SIZE OF TIRES	
F	R

O. D. READINGS		
MO.	1st	15th
JAN.		
FEB.		
MAR.		
APR.		
MAY		
JUNE		
JULY		
AUG.		
SEPT.		
OCT.		

HOW 89 FLEETS FIT PINS

IT must be the weather or something. . . . After receiving a beautiful response to the Insurance questionnaire, the bottom literally "dropped out" of our Question-of-the-Month Club, as only 89 operators "found the time" or "felt the inclination" to report on Question Number 55—Piston-Pin Fitting.

As is our usual custom, those 89 gentlemen received their typewritten tabulations of all the replies. You fellows who did not participate in it will have to be satisfied with the brief resumé that follows. (We're not going to say any more about it, other than remark that a new questionnaire appears on page 51 of this issue, and we'd appreciate a greater response, even if it is vacation time, hot weather, swimming, etc.)

The first question we asked on Piston-Pin Fitting was, *"Do you fit your own piston-pins, or do you farm-out this work to other shops?"* The growing tendency towards farming-out machine work to independent companies (other than car dealers, factory branches, etc.) is reflected in the answers which were as follows: "Fit Our Own"—32; "Farm-Out"—44; "Some"—13.

In answer to the question, *"If farmed-out, what type of concern does this work for you,"* The Cylinder Grinder was mentioned 35 times; the Automotive Jobber was mentioned 24 times; and the Dealer or Factory Branch was mentioned but 8 times. . . . All of which seems to indicate that truck dealers and factory branches are not getting their share of automotive machine work. As to why they are not getting it, we refuse to comment; however, we believe that business goes where it is invited, you know, and *stays* where it is served best. (That's an old axiom which we like to use, although we did not originate it.)

In connection with the foregoing question, it is interesting to note that some fleet operators are patronizing the automotive jobber for machine-work on some vehicles and the dealer and factory branch on other vehicles, since several operators mentioned more than one source of supply. Now we come to a more interesting question, *"If you fit your own pins, what method is used?"* . . . Reamers were mentioned 43 times; Stone-Type Grinders, 10 times; and Paper-Type Hones, 9 times; some operators reporting the use of reamers for rough-cutting and the newer power-grinders for the finishing operation.

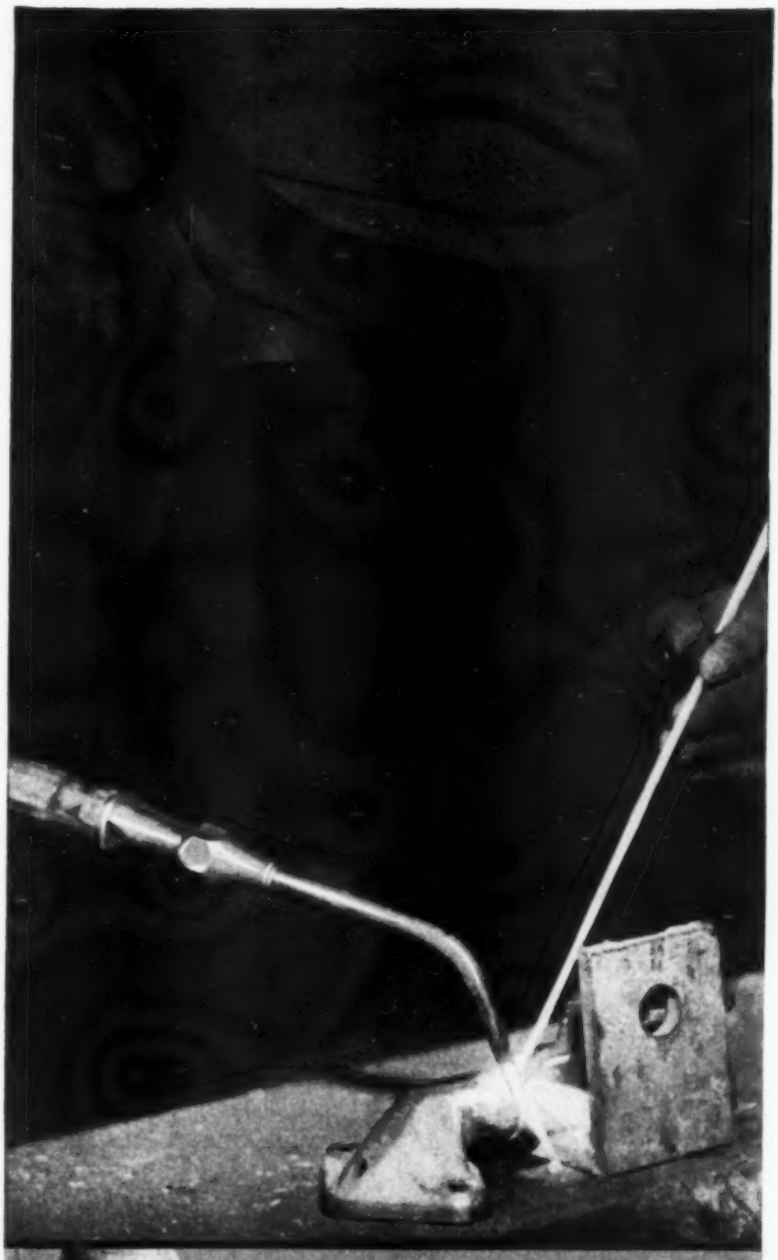
May we caution the reamer people to hold back that smile of satisfaction. Although "figures don't lie," it will be interesting to read, later on in this summary, the difficulties under which reamers are continuing to be used; and if one reads "between the lines" he will no doubt gather that although reamers are still being used by a majority of the operators, reamers, unlike blondes, are not the *preferred* method, but are simply being used because fleet shops are equipped with them—just like the fellow who struggles along with his wife, when he really is in love with another man's storm-and-strife.

Since we are still on the subject of reamers, it will be interesting to review the answers to the next question, *"If reamers are used, how are they operated?"* . . . Thirty operators reported "By Hand" . . . Sixteen reported "By Power" . . . and eight operators reported "By Hand and Power" . . . The remaining 35 operators did not answer. (The total number of operators using reamers, according to the answers to the above question, jumps to 54, probably because some operators may not use reamers for piston-pin fitting, but *do* use them for other work around the shop.

The next question, *"Are you satisfied with your present piston-pin fitting method?"* brought "Yes"—68; "No"—12; and "No Answer"—9. . . . Again, it might be said that "figures don't lie," but it seems that this question was answered with a bit of compunction on the part of many operators, for their remarks at the end of the questionnaires, (which only *we* have

(*Please turn to page* 34)

GENTLEMEN in the fleet industry are expressing their preference for power-operated pin-hole grinders. . . . The one illustrated here is shown only because it is TYPICAL of several outfits available for this work. . . . The article reveals some interesting data.—H.C.F.



10 Seconds is all you need to Change Blowpipes

• The Prest-O-Weld Detachable Valve Body feature of the Type W-105 Welding Blowpipe enables you to switch quickly to a smaller welding blowpipe or to a cutting blowpipe or cutting attachment, without disconnecting the hose or using a wrench.

Prest-O-Weld Type W-105 Welding Blowpipe complete with 5 tips $27.00

Prest-O-Weld Type W-105 Handle Assembly (same as above but without valve body) $19.00

Prest-O-Weld Type CW-105 Cutting Attachment, complete with No. 1 and 2 nozzles $21.00

Prices slightly higher west of Rocky Mountains

PREST·O·WELD helps eliminate loss of WELDING TIME

• With the Prest-O-Weld Detachable Valve Body, you can switch to a larger or a smaller welding blowpipe, a cutting blowpipe or a cutting attachment *in ten seconds.* It is not necessary to disconnect the hose or use a wrench.

This feature means time saved . . . money earned . . . especially on hurry-up jobs which involve both welding and cutting or very light welding as well as heavy welding. There is no fussing with hose connections or wrenches. Each man can weld almost continuously 60 minutes of each hour he uses Prest-O-Weld welding and cutting apparatus.

The Prest-O-Weld Detachable Valve Body is supplied on all new type Prest-O-Weld Blowpipes. If you own one new type Prest-O-Weld Blowpipe, you can obtain additional blowpipes merely by buying the necessary handles. The Detachable Valve Body fits them all.

Your jobber will show you how it works.

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

UCC

In Canada: Dominion Oxygen Co., Ltd. Toronto

PREST-O-WELD

WELDING AND CUTTING APPARATUS

A "SURVEY" ON PIN-FITTING PRACTICES (Continued)

the privilege of peeking at) seem to belie their simple "Yes" and "No" answers. . . . We'll come to them later.

Next in order was, *"If you are not satisfied with your present piston-pin fitting method, what difficulties are you experiencing?"* . . . So here are a few of the difficulties most frequently mentioned, un-retouched, un-varnished and copied off in the same language as they appeared on the questionnaires. . . . And may we report that there were *more* than twelve operators who made the following typical remarks:

"Reamers chatter too much—pin-holes should be honed."

"Chattering and gouging when reamers are used."

"Hard spots in some bushings vary the reamed size."

"We do not get 100% bearing surfaces at all times."

"The reamer-hand method chatters."

"Reaming by hand is too slow—alignment not always perfect."

"Sometimes we ream piston-pin holes out of line."

"Spiral reamers o.k.—straight-blade worthless."

"Reaming does not give us quite a 100% fit."

"Reaming too slow—requires a perfect reamer at all times."

"Reamed holes are not accurate enough."

"Not a burnished bearing fit when reamers are used."

So now, friends, you see why we cautioned the reamer people to hold back that smile of confidence; more of the "reasons why" are reflected in the answers to the next question, *"If you were to change methods, which method would you prefer for piston-pin fitting?"* . . . Here are the answers; read 'em and weep: "Stone-Type Grinder"—15; "Paper-Type Hone"—10; "Power Reamers"—5; "Reaming and Honing"—2; . . . Fifth-seven operators refrained from answering this question, (fearing an onslaught by salesmen, possibly) although the remarks on their questionnaires indicated that a greater percentage would like to use piston-pin hones and grinders, if their big bosses could scare up the money to buy them, or perhaps, if some enterprising salesman would come near them and try to "sell" them this type of equipment.

The next question, *"About how many sets of pins do you fit per month?"* is relatively dull and uninteresting. The answers emphasize that we all are getting pretty good service from today's piston-pins, due no doubt to better design, better lubrication and better materials, to say nothing of better equipment with which to install them. . . . Sixty-six operators reported various numbers of sets of pins fitted per month, the answers ranging from one set per month to 30 sets per month—the average number of sets fitted per month being 4.5 sets.

IS this, the orthodox method of piston-pin fitting, to be relegated to the scrap-heap? . . . The replies to our survey on the subject reveal that although reamers are still being used in most shops, fleet men are not satisfied with their performance and are casting anxious eyes at modern, power-operated, hone-type "hole-enlargers."

The answers to the next question also emphasized that we are getting better service from today's piston pins. . . . We asked, *"What is your average mileage per set of piston-pins?"* . . . Average mileages ranged from 20,000 to 100,000 miles. . . . Seventy operators answered this question, and the *average* mileage per set of piston-pins, among the 70 fleets, figured out to about 46,000 miles. (Your Editor well remembers the days when 20,000 miles out of a set of piston-pins was considered good mileage, except if one did not mind a little knocking.)

And now that delicate question—source of supply. . . . We asked, *"What is your source of supply on piston pins?"* Pretty nearly everyone answered this questionnaire, some operators reporting more than one source. Here's how the sources of supply tallied: "Automotive Jobbers"—75; "Dealers"—15; "Vehicle Manufacturers"—12; "Cylinder Grinders"—1. . . . We must refrain from commenting on the last question, since it is not our job to take sides with anybody, and we have good friends among both truck and independent manufacturers, you know. . . . If any single faction covets this business, it is their duty to go after it, and that's that.

In answer to the question, *"If 'replacement' pistons are used, which make or makes do you prefer?"*, about a dozen different makes were mentioned, some mentioned very, very often, and some very, very seldom. . . . We do not mention trade-names in feature articles, and if you are interested in knowing which makes are the favorites among fleets, ask Brother Fischer for a copy of the Summary to Question No. 55. . . . But before you do so, fill out the blank on page 51 of this issue, and send it in to us "in payment" for same, since only those brothers who participated in the pin-fitting questionnaire are really entitled to that summary; the others must be satisfied with the resumé which we are printing here. If you send us the questionnaire in *this* issue, properly filled out, we will call it square, and send you the dope on pin-fitting in return, as well as a tabulation of the replies to the present question, just as soon as it is ready.

It is getting rather tiresome for us to have to repeat that these questionnaires are "confidential business" and only those who participate in them are really entitled to the "confidential" summaries which follow them. In these summaries you get *all* the "meat"—trade-names, brands preferred, and everything. So why not start out today and become a regular "member" to our Question-of-the-Month Club? . . . The questionnaire is on page 51 of this issue, and there will be a new one every month. So much for that.

Getting back to our subject, the next question asked was, *"Do you*

(*Please turn to page* 35)

For Long Hard Mileage—

want to know when you buy. Brilliant performance is common enough in most new trucks today, but not all trucks can continue to give you trouble-free, low-cost service

For Long Hard Mileage—

and Economy Spread Through the Years

INTERNATIONAL

A suit of shoddiest materials may stand the test of a sunny afternoon's parade. But what of its condition after a month of hard everyday wear?

And, likewise, what about the truck you buy, at the end of a year's hard service?

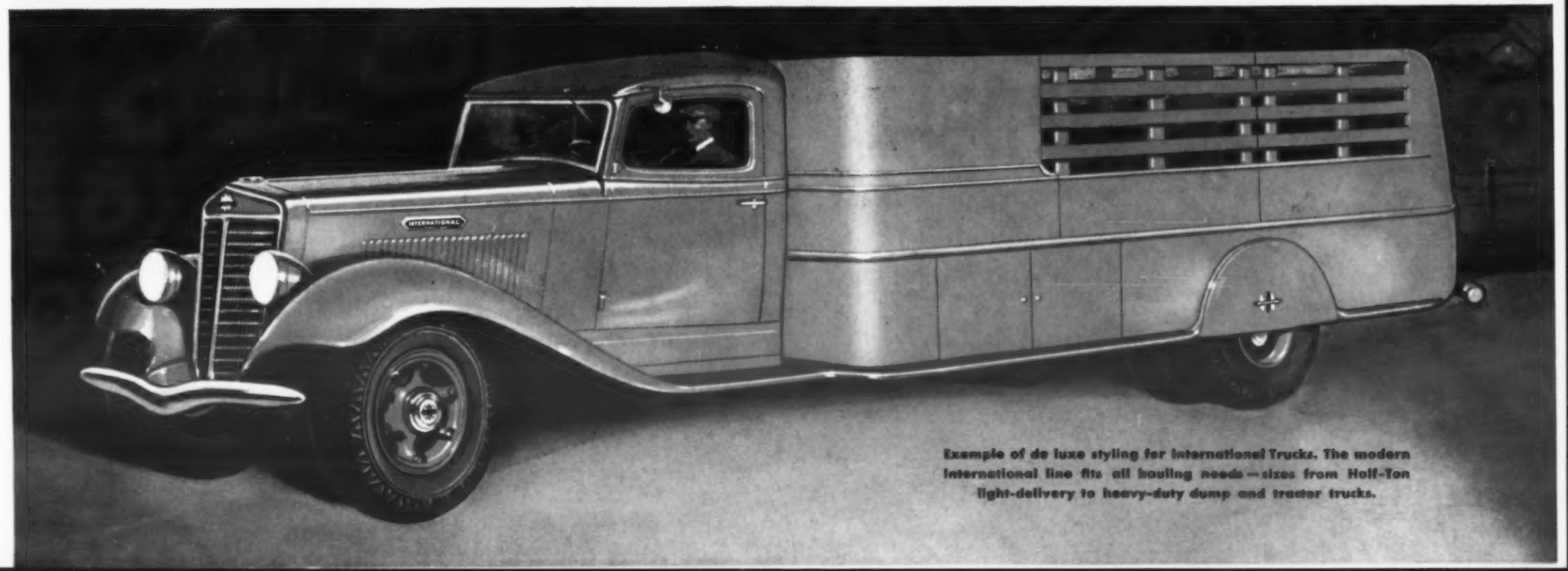
A short try-it-on-the-job demonstration cannot tell you what you're going to find out after long mileage. And that's what you want to know when you buy. Brilliant performance is common enough in most new trucks today, but not all trucks can continue to give you trouble-free, low-cost service for long.

By far the greater part of a truck's economy is in lasting stamina—a steady procession of ton-miles delivered over a period of years. That is being proved by Internationals, at the hands of thousands upon thousands of owners.

We have no greater message for truck buyers than this: Investment in International's lasting quality will give you economy spread over many years.

INTERNATIONAL HARVESTER COMPANY
OF AMERICA
(INCORPORATED)
606 So. Michigan Ave. Chicago, Illinois

INTERNATIONAL TRUCKS



Example of de luxe styling for International Trucks. The modern International line fits all hauling needs—sizes from Half-Ton light-delivery to heavy-duty dump and tractor trucks.

All Internationals Bring You the Full Benefit of Our Truck Experience . . .

● International Truck performance is the best evidence you can get of sound truck investment. It is obvious that the results of International engineering experience gained in 30 years of truck building would be embodied in the perfected Internationals of today. Moreover—it is plain good sense for a truck buyer to ally himself with the largest Company-owned truck-service organization in the world. These are fundamentals you can bank on. They don't change except for the better. International Trucks range from Half-Ton light-delivery to heavy-duty dump and tractor trucks. A few models are shown on this and the preceding page. Ask for a demonstration.

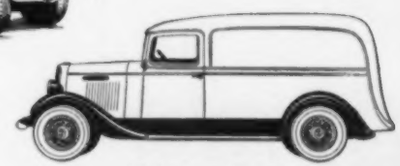
DEALERS: The International franchise offers you an exceptional combination of quality trucks, attractive prices, a full range of sizes, and unequaled sales and service support through Company-owned branches. Write us direct, or ask the nearby branch for full details.

Above: **Two six-wheel International dump trucks serving a building material company. There are 44 Internationals in this fleet.**

Half-Ton Pick-Up

1½ to 2-ton Panel Stake

2 to 3-ton Van



Half-Ton Panel

INTERNATIONAL HARVESTER COMPANY
OF AMERICA (*Incorporated*)
606 So. Michigan Ave. Chicago, Illinois

INTERNATIONAL TRUCKS

HO

specify … *pins* … *from* … . . . Th … "Yes" … and fif… one. I… that … who s… of th… piston… ers or… that i… specify… presur… are g… ment … more … who b… tomoti… make …

And … squee… more … *source* … *ment?* … "Jobb… ers."— … All of … motiv… equip… to the…

The … eye-op… put i… can d… your … (As i… asked … *with* … *ment* … "Spin… "Hyd… dition… ing … Hous… Bush… Bush… prove… fittin… piece… you …

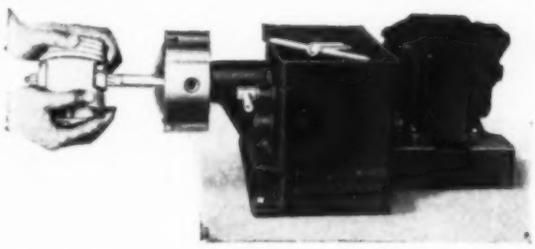
July …

HOW 89 FLEETS FIT PISTON-PINS (Continued)

specify the MAKE of piston-pins desired, when ordering from your source of supply?" . . . Thirty-five operators said "Yes"; thirty-nine said "No"; and fifteen did not answer this one. It might be pointed out that among those fleet men who said "No," twenty-seven of them are getting their piston-pins from either dealers or factory branches, so that it is not necessary to specify the make desired, the presumption being that they are getting original equipment parts. . . . So therefore, more than half of the fleets who buy piston-pins from automotive jobbers *do* specify the make when ordering.

Another question which we squeezed in, just to make it a bit more lengthy, was, "*What is your source of supply on shop equipment?*" . . . The answers were: "Jobbers"—60; and "Manufacturers"—6; with 23 "No Answers." All of which proves that the automotive jobbers are *selling* shop equipment to fleets, other opinions to the contrary notwithstanding.

The last question was more of an eye-opener than anything else. We put it in to emphasize that you can do several additional jobs with your piston-pin fitting equipment. (As if you didn't know it.) . . . We asked, "*What other jobs do you do with your present pin-fitting equipment?*"—Here are the answers: "Spindle Body Bushing Jobs"—23; "Hydraulic Brake Cylinder Reconditioning"—7; "Water Pump Bushing Jobs"—17; "Steering Sector Housing Jobs"—14; "Cluster Gear Bushings"—11; and "Various Bushing Jobs"—17. . . . Which proves that a set of reamers or pin-fitting hones is a very versatile piece of shop equipment, in case you didn't realize it before.



AND here is the reamer's salvation—the power-operated reamer-drive. . . . Fleet men expressed themselves in this survey as preferring to use reamers operated by power, rather than by hand. . . . That is, unless they can inveigle the "boss" into buying them a nice, new, shiny outfit of the abrasive type, for making "big holes out of little ones."—Editor.

And then we asked for "Remarks" and we got plenty—good, bad, interesting and taken-for-granted. Here are a few of the typical ones, briefed down, so that he who runs may read:

"*Seldom necessary to replace pins between motor overhauls.*"

"*Have trucks with 120,000 miles and pins still good.*"

"*When properly lubricated, pins give very little trouble.*"

"*We use reamers and lapping machine for a good finish.*"

"*Use hand reamers, but think power-driven reamers better.*"

"*All our bushings are finished by grinding.*"

"*We use a good grade of oil and get high mileage on pins.*"

"*Outside shops can do a better job—and cheaper.*"

"*We have a paper-type pin-hone and like it fine.*"

"*Bushings cause most of our piston-pin trouble.*"

"*Passenger cars give little pin trouble; mostly on heavy trucks.*"

"*We do very little motor work as we trade in cabs yearly.*"

"*Pistons usually come to us with pins fitted.*"

"*Have found hones and grinders very versatile.*"

"*Very little trouble with pins on any motors.*"

"*Reamers must be perfect, or jagged surface will result.*"

"*Prefer electric hone or stone-type grinder.*"

"*Power reamer for heavy-cut; honing for finishing.*"

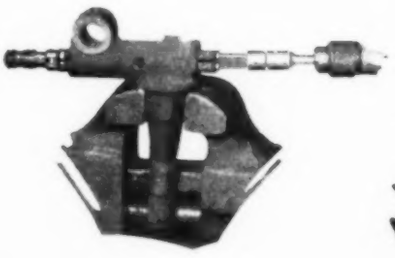
"*Hone is far superior to any other method of pin fitting.*"

So that's the story on piston-pin fitting, and the conclusion that we draw, after perusing the *individual* returns, is that power-lapping devices are becoming more and more the *preferred* method of piston-pin fitting. . . . Of course there are many who still claim that reamers are superior, especially those fine souls who are in the reamer business, but perhaps the "fine edges" of superiority (how's that for a pun?) of reamers have not been sufficiently expounded to fleet operators, while the merits of the power-grinders have. (Pardon us, that was the advertising department speaking.)

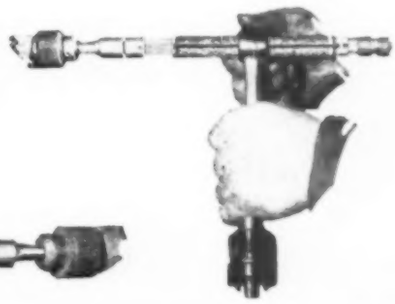
Undoubtedly many fleet operators (and manufacturers) who read this article will wonder just how *representative* this "survey" really is, what types of fleet operators participated in it, in what parts of the country they are located, and about how many vehicles each of them operate? So here is a breakdown of the 89 operators who participated; God Bless 'em!

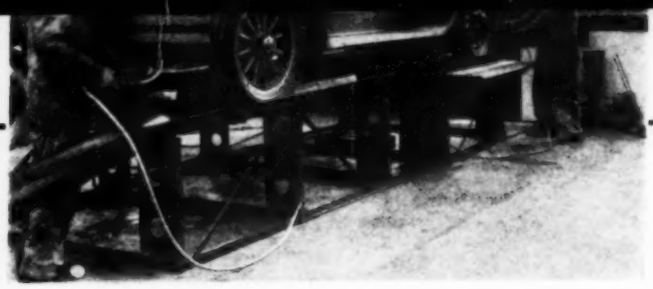
There were 19 trucking companies; 9 bakeries; 7 meat packers; 5 dairies; 5 public utilities; 5 bus operators; 5 taxicab companies; 4 county departments; 4 department stores; 4 laundries; 3 municipalities; 3 contractors; 3 petroleum companies; 2 grocery companies; 2 telephone companies; 2 ice-and-

(*Please turn to page* 57)



TO prove that his pin-hole "stretcher" is quite a versatile bag-of-tricks, one manufacturer calls your attention to these three additional jobs which you can do with his outfit. . . . There's where you collect the "gravy," says he. . . . And many fleet men corroborated him, in the survey.





An "Inside Story" *about* Valve Insides

CAST OF CHARACTERS

"WE-TIRE YOU"—A factory branch, supplying tires to fleets on a mileage basis.

"YOU-TIRE ME"—A taxicab fleet operator, using the above tires on the same basis.

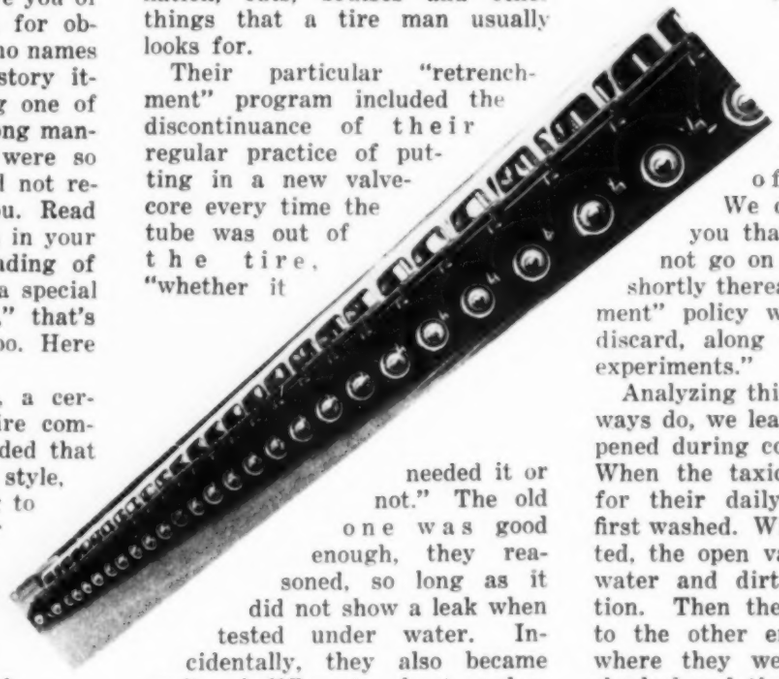
DURING the past three or four years, the word "retrenchment" came in for a lot of glorification. When you fired your porters, and made your mechanics clean up their own mess—that was "retrenchment." When certain manufacturers decided to cancel all of their advertising—that, too, was "retrenchment."

What follows is a true story! Before we begin, let us assure you of this fact. Unfortunately, for obvious and ethical reasons, no names can be mentioned. The story itself was picked up during one of your Editor's contacts among manufacturers. The figures were so enlightening that we could not resist passing them on to you. Read them, and then paste them in your scrap book under the heading of "Tires." Or, if you have a special folder for "Retrenchment," that's a good place to file them, too. Here it is:

Like many other firms, a certain branch of a large tire company, some time ago, decided that "retrenchment" was in style, fashionable, and the thing to do. They perked up their noses and looked for ways and means to "cut" expenses. For the sake of anonymity, we shall call them *"We-Tire-You — Tires & Tubes for all Rolling Equipment; Specialists in Commercial Fleet Accounts on a Mileage Basis."*

From the foregoing business card, you will at once have gleaned that this company supplies tires on a mileage basis; that is, they continue to own the tires, and sell the use of them at so much per mile. They are, of course, interested primarily in obtaining all possible mileage from each tire at a minimum of upkeep expense. For this reason, they maintain a tire repair shop and have a crew of men who do nothing else but inspect the tires and tubes on every vehicle, and check for inflation, cuts, bruises and other things that a tire man usually looks for.

Their particular "retrenchment" program included the discontinuance of their regular practice of putting in a new valve-core every time the tube was out of the tire, "whether it needed it or not." The old one was good enough, they reasoned, so long as it did not show a leak when tested under water. Incidentally, they also became quite indifferent about valve-caps, as long as the fleet operator was not worrying about them either. This particular "retrenchment" program saved quite a few pennies, it must be admitted, but here is what happened:



On one certain taxicab operation, patronizing this service, which we shall call *"You-Tire-Me —Cabs at All Hours of the Day or Night"*—flat tires usually numbered about 216 as a daily average; a lot of tires to repair, don't you think? Shortly after the adoption of said "retrenchment" program, this daily average of flat tires immediately jumped to 442 flats a day—*more than double* the normal number.

Let's figure it out . . . . At an average total cost of one dollar per tire and tube for repairs and lost mileage, this represented an increase in tire maintenance costs of over $200 per day —or $5,000 per month—a very heavy price to pay for the comparatively insignificant saving in new valve-insides and caps. Such are the effects of "retrenchment."

We do not need to tell you that this business did not go on for very long, and shortly thereafter the "retrenchment" policy was ordered to the discard, along with other "noble experiments."

Analyzing this further, as we always do, we learned that this happened during cold winter weather. When the taxicabs were serviced for their daily runs, they were first washed. With valve-caps omitted, the open valve-stems collected water and dirt from this operation. Then the cabs were driven to the other end of the garage, where they were gassed up, oil checked and tires inflated. If the water in the valve-stems had not already frozen, is usually did when air was applied to the valve. The valve-inside seals were then injured by the condition; just as pulling a wet hand from an ice-cold piece of metal tears the skin. Then, too, the application of air would sometimes force water and dirt into the opening under the valve-inside seat, and the particles would lodge there, causing slow leakage. The valve-caps, of course,

(*Please turn to page* 66)

THE IGNITION CABLE OF

Balanced Characteristics

Some other cables might equal Packard's ability to withstand heat—and some of them might match Packard's ability to resist abrasion. But no other cable has the exact qualities of the new Packard FOUR-FORTY. This rugged new cable is built with BALANCED CHARACTERISTICS. It offers a heretofore unknown degree of resistance—not only to heat and cold—but to high voltage rupture, oil, age, abrasion, and corona as well! It is built to withstand every kind of punishment the toughest job can give. And that is why it performs better, lasts longer and gives greater satisfaction. Order Packard FOUR-FORTY from your jobber today. Packard Electric Corporation, Warren, Ohio.

Packard
REG. U. S. PAT. OFF.
TRADE MARK

THE STANDARD WIRING EQUIPMENT OF THE AUTOMOTIVE INDUSTRY

Unusual Aluminum Body on Ford Truck

A "ZEPHYRIZED" Ford V-8 truck has been placed in operation by the Olson Rug Company for city delivery service in Chicago.

Modeled after the latest high-speed railroad trains, its light but durable aluminum construction reduces the weight a full 1,000 pounds, enabling rapid pick-up and added speed over the average commercial truck.

Each of the side panels are hand-hammered out of one piece of aluminum, curving with unbroken streamline effect into the steel top. The attractive satin aluminum finish is embellished by parallel bands of moulding around the body, made of stainless steel, highly polished and set off by alternating bands of red.

A safety feature is the spacious cab for the driver, with shatter-proof glass on all sides, giving visibility in every direction. The glass for the corner windows was specially curved so that it is an inherent part of the body design; and the motor is inside the body with a special housing which may be removed simply by loosening two screws.

The new body is built on a standard V-8 Ford truck chassis, the only change being in the steering mechanism and the brake, clutch and accelerator pedals. With an over-all length of 22½ feet, and a capacity of 3,000 pounds, this unit has a wheelbase of 157 inches and a height of 7½ feet at the driver's cab.

Eye appeal was not the only purpose in streamlining. The design adapts itself perfectly for the delivery of rugs and carpets, the beavertail end accommodating long rugs at the bottom and shorter rugs at the top with instant accessibility. The rear door is opened at the touch of an electric button in the driver's cab.

"All of the latest inventive features have been incorporated in this truck with which we are experimenting," Walter E. Olson, president of the company, explained. "This is the only unit built. Trials indicate that it will prove successful both from the standpoints of safety and speed in city deliveries; and, if so, we plan to place a fleet of them in operation."

●

Survey Shows Trucks Fastest, Most Convenient

MODERN business demands celerity in movement, universal door-to-door service, and equipment better adapted to meet the needs of the day, states a report on freight traffic recently submitted to the Regional Coordinating Committee of the Railroads by Joseph B. Eastman, Federal Coordinator of Transportation.

It declares that the motor vehicle is superior to other forms of transportation in its ability to synchronize its schedules with the patron's needs, although rail carriers have it in their power to reduce, if not overcome, this handicap. Carriers can reduce substantially the shipper's cost of transportation by providing vehicles which are shock-proofed to reduce packing, fitted with economical temperature control apparatus, and constructed to facilitate cheap loading and unloading.

The report, drawn up following an intensive two-year study of freight traffic in the United States, declares that modern commercial needs and competitive transportation conditions imperatively demand a thorough reexamination of the operating methods of the railroads, of their service and equipment, and of their rate structure.

Railway service, although potentially the fastest of all land transport, was found to be far slower in general than highway service and not much, if any, faster than water or pipe-line service, due to the fact that a railway car is in motion less than one-third of the time it is in the hands of the carriers. Constant assembling and reassembling of car-lots to make up long trains, together with parallel schedules maintained by competing railroads, are responsible for frequent delays.

For short distances, railroad carload rates are substantially in excess of the cost to the shipper of furnishing his own transportation by highway. In the case of a number of commodities, this is true for distances as great as 200 miles or more.

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World's Largest Dump Truck Unit

TRUCKS of a size and capacity hitherto undreamed of have been brought into being by the huge Western dam projects. Even surpassing the 16-yard monster Macks that worked at Boulder and San Gabriel is this Mack unit working at Bonneville Dam, the $32,000,000 power and navigation project on the Columbia.

Sixty-one tons of muck are hauled in the 35-yard Le Tourneau buggie mounted on this truck. It rides on a small fortune in rubber—26 tires in all. It takes the world's largest dragline crane, a $175,000 Bucyrus-Monighan, the bucket of which dumps 6 tons at a clip, to load the world's largest dump truck.

Tractors hauling smaller buggies are also being used for this work. The advantage of the truck is its speed —25 miles an hour on the return trip,—which enables it to cover many trips per day.

How to Match and Inflate Dual Tires

ALWAYS a controversial subject, the matter of matching and inflating dual pneumatics will interest most operators. . . . In this article, a tire service man explains just why, for example, the inside tire should carry less air. . . . And why, if varying treads are used, the one that is newer should be placed on the outside. . . . This article should help you realize better mileage.—H. C. F.

By Baxter Wood,

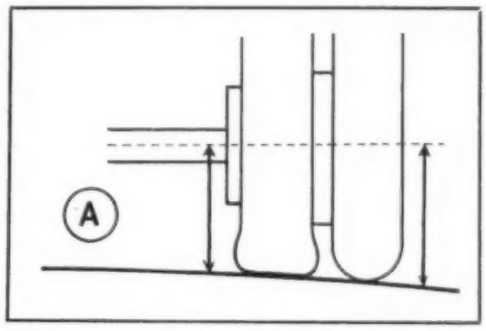
Service Man, Goodyear Tire & Rubber Company.

IMPROPER matching of dual truck tires results in a loss of from 20 per cent to 50 per cent in tread wear. It also causes the overloading of one of the tires, which is responsible for many tires being destroyed after slight service.

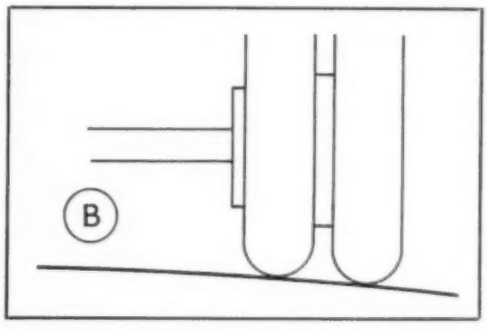
Practically all roads have a certain amount of crown. The amount varies widely. In some cases it is slight and in some cases very extreme. Provision must be made for this by proper matching of dual tires and by correct inflation.

Illustration "A" shows what happens when tires are improperly matched with the worn tire on the outside position. Notice that the inside tire is forced out of shape and that the outside tire is running only lightly against the road. It is clear that the inside tire is carrying more than its share and is overloaded. Strange as it may seem, this condition will cause the outside tire to wear more rapidly.

Note that this condition gives the two tires different effective rolling radii and thus different rolling circumferences. However, both tires must complete one revolution within the same distance. This will cause one tire to slip in order to take up this difference. Since the outside tire is carrying less load, there is less pressure between it and the road, so the outside tire is the one that does the slipping. This slippage naturally results in wear.



Believe it or not, when this condition prevails, the outside tire will be the one to wear out first, because it will slip more.



Here is how your tires should work, if you follow the advice given in this article on correct matching and inflating.

Since both dual tires should carry the same amount of load, the tires and their air pressures must be arranged to accommodate road crown.

If two tires are worn to the same extent, the air pressure in the outside tire should be a few pounds higher than that of the inside. The inside tire should be kept at the recommended inflation. The amount of difference between the two depends upon the amount of road crown. For the average road, the outside tire should be inflated five pounds more than the inside.

Illustration "B" shows the effect of proper matching and inflating. Note that both tires have taken the same shape, indicating that both are carrying the same amount of load.

There is no problem when two tires are worn the same amount, except that more air pressure should be carried in the outside tire. If there is a difference in the amount of wear, the larger tire should be on the outside.

Illustration "C" is an example of bad mounting. There is too much difference in the wear of

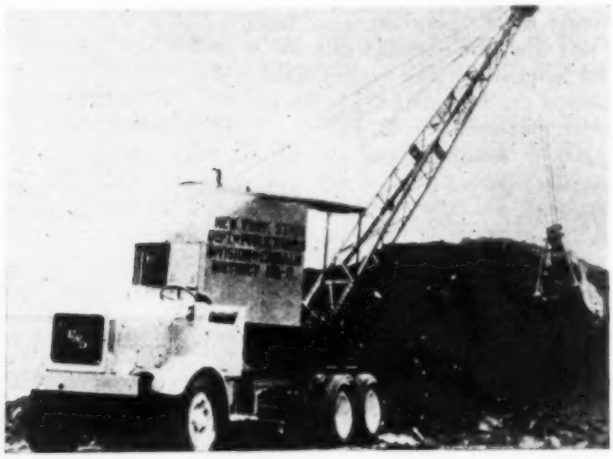
(*Please turn to page* 64)

This is Wrong! There is too much difference in wear and the worn tire should be on the inside.

This is Right! The better tire of the two should be on the outside. Note the difference in wear.

Loraine Crane on FWD Chassis

A FOUR Wheel Drive Model X6, made at Clintonville, Wisconsin, has been chosen as the mount for a powerful Universal Lorain crane recently put into service by the State of New York in its Construction Department.



The Universal began as a "War Baby." The idea of mounting a full-revolving crane on a motor truck had its origin in the mind of some unknown soldier in the American Expeditionary Forces, in France. Universal accepted the idea and developed the pioneer truck crane in 1918-19.

It was successful immediately and, unlike many "war babies," it did not die in the post-war period. Instead, it thrived. The principle has found its greatest development in the Lorain-75 cranes, recently announced by the company. They lift more and weigh less than the original crane developed for war purposes.

The FWD X6 is well adapted to the demands put upon it as the foundation for the portable crane, because of its stability, the makers state. Four-wheel traction over two widely-separated axles—the front axle of the truck and the front axle of the bogey—make it possible to negotiate rough terrain without difficulty, it is claimed.

The X6 is equipped with three axles and ten tires. Reports of a test made by the University of Purdue show that the model has a mechanical efficiency of 88.2 percent, only 11.8 percent of the power being required to drive the mechanism. In spite of its stability, the X6 chassis is of light weight.

A center differential with manual lock operated from the driver's seat (a basic FWD design) eliminates all unnecessary strain in the mechanism because it compensates for the difference in distance travelled by the front and back drive wheels, with each turn of the propeller shafts, FWD engineers declare.

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S.K.F. Issues Ball Bearing Data

S. K. F. Industries, Inc., Philadelphia, has covered a wide scope of bearing information in its 76-page edition of Engineering Data Sheets just off the press.

Subjects include index of bearing types; selection, mountings and lubrication of ball and roller bearings; self-aligning ball bearings; single row ball bearings; double row ball bearings; spherical roller bearings; cylindrical roller bearings; ball thrust bearings; conversion tables; transmission appliances; district offices; and tables showing principal dimensions, shaft fits and tolerances, housing fits and tolerances, removable sleeves, shaft locknuts and lockwashers, corner radii and shaft fillets.

For your free copy of this ball bearing data, address S.K.F. Industries, Front St. & Erie Ave., Philadelphia, Pa. . . . Mention of FLEET OWNER will help.

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Timken Axle's 1933 Bulletin Now Obsolete!

ON September 1, 1933, The Timken-Detroit Axle Company issued a bulletin giving complete engineering data for the application of Timken and Wisconsin axles to motor vehicles. This bulletin has been used extensively in the trade as a reference and, although now out of date, has been found still in use occasionally for capacity of Timken and Wisconsin axles.

The Timken-Detroit Axle Company advises the automotive industry that the above bulletin is very definitely obsolete and has no bearing on current axles. In every case the vehicle specifications are submitted by the vehicle manufacturer and axle recommendations are made in writing by Timken and Wisconsin to the vehicle manufacturer.

Purchasers of motor vehicles equipped with Timken or Wisconsin axles should disregard any reference to the above mentioned bulletin, factory officials declare.

●

Here's An Interesting DeLuxe Van Body

FLEET men will undoubtedly find this streamlined deluxe van body of unusual interest, since it is claimed to be one of the most elaborate and outstanding bodies that Gerstenslager has ever built.

This body was built for Ed. Werner, Pittsburgh, Pa., and is mounted on a Diamond T chassis, Model 512, with 225-inch wheelbase and 9.75 x 20 tires. Its capacity is 1,200 cu. ft. with rear doors closed; with tailgate load it will hold 1,400 cu. ft. of material.

Some of the features are as follows: Double full-length doors in rear, with disappearing type tail-gate; aluminum roof; sloping windshield with side-wings hinged for ventilation; streamlined fore-peak and beaver-tailed rear, with French type roof corners. The engine hood was redesigned somewhat wider, to effect better streamlining.

Some of the accessories include: 2 electric windshield wipers; 2 courtesy lights, front and rear; 3 marker lights on each side; dome-light in cab; 3 dome-lights in body; double tail-lights; and 3 "Michigan" lights, front and rear.

Further details concerning this unusual custom-built body may be obtained directly from The Gerstenslager Company, Wooster, Ohio. . . . You'll tell them you saw it in FLEET OWNER, won't you?

Where *the* Piston Expander "Fits In"

IN locomotive design, due to the amount of power developed and the stresses set up, the principle of the cross-head is used.

The purpose of the cross-head is to take the angular thrust of the connecting rod and prevent any portion of this angular stress from being imparted to the piston or the cylinder wall. The cross-head, being an individual unit and entirely outside the cylinder, can be made heavy enough to handle these angular forces safely. As a result, the only force which acts on the piston, the driving force, is parallel to its direction of motion, thus leaving the piston free to move in a straight line with its axis of motion always concentric with the center line of the cylinder.

The automobile engine, however, for reasons of simplicity and light weight, is built without a cross-head. The piston is designed to serve a dual purpose, the normal functions of a piston and the practical purpose of a cross-head. So the automotive piston is made longer in proportion to its diameter and is *designed* to take the angular thrust stresses from the connecting rod. These stresses are transmitted from the piston to the cylinder wall and, when not properly controlled, give audible proof of their existence in the form of a piston slap.

In the old days, when automobile engines had four large cylinders and piston speeds were comparatively slow, it was possible to make pistons heavy enough to give them the necessary strength to withstand these angular stresses. And with lower speeds will be found lower operating temperatures, lower inertia forces and in every respect less severe operating conditions.

Today with six and eight small cylinders, high piston speed, the necessity for light reciprocating weight, high operating temperature, large inertia forces and severe conditions generally, it is extremely difficult to design a piston which can meet these opposing conditions and at the same time embody those qualities which assure a long and efficient life.

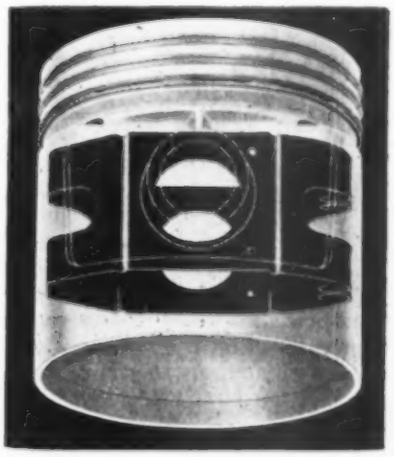
Particularly after the cylinder wears a bit, then the ability of the piston to respond effectively to these angular forces is made much more noticeable. Some engineers describe this condition as the "collapse" of the piston skirt, meaning not necessarily that the piston has broken but usually that it has lost its effective elasticity, which is the same as saying that the piston has lost its endurance, its stamina. its punch, its courage.

And just like the rest of us, when a piston gets in that condition it needs what we all need, a friend, a little moral and material support. When such support is properly administered, the piston snaps out of its decline, regains its old pep, its enthusiasm for work and again starts in to effectively fight its eternal problem, the angular punches administered by the connecting rod.

So the piston skirt expander was born, to befriend light, high-speed pistons and encourage them to stand out firmly against the cylinder wall.

A piston will fatigue first at its weakest point which, in the light of this subject, will be the thin lower portion of the skirt farthest away from its nearest support, the piston pin. An expander, it is claimed, correctly designed and properly located, will correct this condition and restore the vertical line of the piston skirt to a straight line parallel to the vertical line of the cylinder wall. (*Please turn to page* 69)

HERE are three distinct TYPES of piston expanders, all of which, presumably, are designed to accomplish the same purpose . . . There are, of course, other expanders on the market. These three are shown only because they are typical of various piston expander designs.—Editor.



READER SAY-SO

(Picked at Random from The Editor's Mail-Bag)

"Best" Means "None Better"

"TO the Editor: We consider FLEET OWNER the best of the numerous publications devoted to commercial trucking. We find the articles interesting and of practical help to us in our fleet problems."—*Mr. Liddle, Merchant's Transfer & Storage Co., Des Moines, Iowa.*

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A "How'ya" from Hawaii

"DEAR Mr. Fischer: I appreciate your magazine, FLEET OWNER, very much and have gotten plenty of useful information out of it. I would like to get a copy of the booklet on painting galvanized iron, as we build our own bodies and have experienced considerable difficulty in getting the paint to stay on these surfaces."—*E. G. Leehman, Honolulu Dairymen's Association, Honolulu, Hawaii.*

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A Bus Operator Speaks Up

"TO the Editor: Your publication, FLEET OWNER, is a good publication and I don't know of any special improvements that you could make in it. . . . I enjoy the issues and wish to thank you very much for sending them. I hope our name will continue to stay on your mailing list.—*H. O. Klinke, Linnton Stages, Inc., Portland, Ore.*

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Oil Man Wants Index

"TO the Editor: In looking over the June issue of FLEET OWNER, we were interested in the first article on the Editorial page, entitled 'Who Wants An Index?' . . . The writer has a complete set of your publications since his name has been entered on the list, and is therefore very anxious to secure an index to be used in connection with this magazine."—*E. W. Criswell, Sec'y., Oil Well Supply Co., Dallas, Tex.*

Short and Sweet

"TO the Editor: I have been a reader of your magazine for the past year and permit me to state that I have found it most helpful. I am sending you our experiences on brake maintenance."—*Axel Fahlstrom, Metropolitan Cleaners & Dyers, Worcester, Mass.*

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Glad to Oblige You!

"TO the Editor: May we have duplicate copies of your October and November issues of FLEET OWNER magazine? These two copies have been mislaid and we are anxious to keep these books on file."—*Joseph Caserta, Pres., The Central Bus Corporation, Bridgeport, Conn.*

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Enjoys Every Issue

"TO the Editor: I am returning your circulation check-up card and want to say that I (we) sure do wish to continue receiving FLEET OWNER. I look forward to, and enjoy *every* issue of this magazine."—*A. L. Davis, Castor Brothers, Philadelphia, Pa.*

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"A Splendid Idea"

"DEAR Mr. Fischer: Relative to your query concerning an index, may we say that this is not only a splendid idea, but is in keeping with your past efforts to furnish your readers with *what* they want, and a means to get it *when* they want it. . . . Please mail us a copy of this index as soon as available."—*John J. Paul, Mgr., Guerin Motor Freight Line, Philadelphia, Pa.*

Anyone Else Want One?

"DEAR Mr. Fischer: In the June, 1935 issue of FLEET OWNER you speak of printing an annual index. . . . I would appreciate one of these as I believe it would be very valuable, since I have my back copies of FLEET OWNER for nearly five years."—*R. C. Kaster, Shop Foreman, Johnson County Garage, Olathe, Kans.*

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E. P. Oil Article Goes Big

"TO the Editor: Your article entitled 'What about E. P. Motor Oils?' on page 46 of the June issue is a very good one. Any articles along this line constitute a great help to us. . . . We would like to have more articles of a technical nature, as we find your technical subjects very interesting."—*W. J. Schaeffer, Los Angeles Gas & Electric Corp., Los Angeles, Calif.*

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Helpful and Beneficial

"DEAR Editor: May I state that your magazine FLEET OWNER is very helpful and beneficial to me at times, and I am very glad to receive a copy each month."—*J. W. Smith, Mgr., Transportation Dept., Philadelphia Storage Battery, Philadelphia, Pa.*

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"Ain't No Such Animal"

"TO the Editor: We are regular readers of your valuable magazine FLEET OWNER, and we get lots of good service from it. . . . Can you give us the name and address of the publisher of a good book on valve-timing?"—*J. D. Shelton, Supt., National Tube Co., Pittsburgh, Pa.*

(EDITOR'S NOTE: *We have never seen a book devoted exclusively to valve timing. However, there are several automotive manufacturers who issue handbooks of this type, in conjunction with other data. We are sending you the names under separate cover.*—H. C. F.)

Real Lube Data Forms Now Available

IF you have been having a tough time in getting the CORRECT lubrication specifications from your car and truck manufacturers in the past, these standard S. A. E. forms should eliminate it in the future.—Editor.

MOTOR-VEHICLE lubrication data may now be compiled on S. A. E. Standard forms, following the completion of a project initiated in the Lubricants Division of the Standards Committee of the Society of Automotive Engineers in January, 1933. The standard forms consist of a set of four sheets to be cited as "Motor Vehicle Lubrication Data Form—S. A. E. Standard," for which the final draft was approved at the last Annual Meeting of the Society in Detroit, held a short time ago.

All manufacturers of motor-vehicles receive requests many times during the year for data on the lubrication requirements of their new models. These requests come from oil companies, lubrication-service data compilers, fleet operators, service stations, etc. Hitherto, any source which required data on a number of new models would receive a mass of unrelated facts, distinguished by its lack of uniformity. Usually it was necessary for each vehicle manufacturer to answer each inquiry separately, with consequent expenditure of time and money.

By obtaining a supply of the S. A. E. Standard forms to cover his new models, the motor-vehicle manufacturer will be enabled to send each inquirer complete and standardized and accurate information at a minimum of cost, and with a minimum of trouble. The forms have been designed especially to be duplicated in quantity by any of the standard processes, such as blueprinting, photostating, or lithographing. One completion of the master form for a particular model of vehicle will take care of the matter until that model is superseded.

The new forms will be of particular interest to fleet operators and others who wish to have comparative information about the lubrication requirements of a number of types of vehicles. Undoubtedly the standard forms will find a ready acceptance by vehicle manufacturers, and that within a short time, requests for information about the lubrication requirements of their vehicles will be answered on copies made from the standard forms. Such a condition will, of course, permit ready filing and cross-indexing of information.

After careful consideration of the S.A.E. Council, the procedure to be followed in the distribution of the new lubricant forms by the Society has been established as similar to that for the S.A.E. Engine Testing Forms (gasoline and Diesel) which have been in wide use for many years; that is, the forms will be furnished at nominal cost to vehicle manufacturers, oil companies and others. The forms are available from stock at the S.A.E. office in New York, in sets of four sheets, at 25 cents a set to non-members, and 15 cents a set

(Please turn to page 57)

MOTOR VEHICLE LUBRICATION DATA FORM

S.A.E. Standard

(Four Sheets) Sheet 1

Note:—If all data are not in readiness at the time of filing in this form, give all information that is available.

Vehicle Manufacturer ..... Address .....
Type of Unit, Passenger Car ( ) Motor Truck ( ) Motorcoach ( ) Taxicab ( ) Stock Engine ( )
Trade Name ..... Model ..... Serial No. Starting .....
Supersedes Model ..... Serial No. Starting ..... Ending .....
Tonnage or Passenger Rating (truck or motorcoach) .....

ENGINE

Manufacturer's Name ..... Model .....
Cylinders, Number & Arrangement ..... Bore ..... in. Stroke ..... in.
Piston Displacement ..... cu. in. Valve Arrangement, (L, overhead, etc.) .....
Brake Horsepower, Maximum ..... at ..... r.p.m. Governed ..... at ..... r.p.m.
Piston, Material ..... Skirt Clearance, Top ..... in. Bottom ..... in.
Piston Rings, No. of Compression ..... Width ..... Make & Model .....
No. of Oil Control ..... Width ..... Make & Model .....
Material of
Cylinder Head ..... Cylinder .....
Intake Valve ..... Exhaust Valve .....
Carburetor, Make ..... Model ..... Size .....
Automatic Choke, Make ..... Model .....
Fuel Feed System, Gravity ( ) Vacuum Tank ( ) Fuel Pump ( )
Fuel, Gasoline ( ) Octane No. .....
Diesel ( ) Visc. at 100 deg. fahr. Auto Ignition Value .....
Intake Heat, (exhaust or otherwise, manual or automatic control) .....
Air Cleaner, Make ..... Model ..... Type .....
Oil Filter, Make ..... Model ..... Type .....
Oil Rectifier, Make ..... Model ..... Type .....
Oil Cooler, Make ..... Model ..... Type .....
Cooling System, Capacity ..... qts. (check each feature) Water ( ) Air ( )
Circulation Pump ( ) Thermosyphon ( ) Radiator Shutter ( ) Thermostat Control ( )
Crankcase Oil Capacity, Initial Filling ..... qts. Refilling ..... qts.
Oil Filler Location ..... Oil Level Indicator Location .....
Drain Crankcase ..... miles. Crankcase Ventilator (method) .....
Lubrication System, Pressure or Splash Feed (indicate which) to Main Bearing .....
Crankpins ..... Piston Pins ..... Camshaft ..... Rocker Arms .....
Timing Gears or Chain ..... Fan ..... Auxiliary feed to cylinders by .....
Special Provisions .....
Oil Pump, Gear ..... Plunger ..... Vane ..... Special .....
Oil Screen Location .....
Timing Gear or Chain Lubrication .....
Rocker Arm Lubrication .....
Oil Pressure, Normal Indicated ..... lbs. at ..... m.p.h. ..... r.p.m.
Minimum Allowable ..... lbs. at ..... m.p.h. ..... r.p.m.
Relief Valve Opens at ..... lbs. Normal Oil Temp. (crankcase) ..... deg. fahr.

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc., 29 WEST 39th ST., NEW YORK CITY

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This is only the first page. Three more pages like this comprise the complete form. They cover engine accessories, clutch, transmission, rear-end, universal joints, steering gear, wheel-bearings, brake mechanism, springs, shock-absorbers, etc., in the order named. . . . Vehicle makers will gladly furnish these specifications with new vehicles.

The TROUBLE SHOOTER

A department, devoted to correspondence from readers of FLEET OWNER. Any questions having to do with automotive service will be answered in this department. All properly signed inquiries will be replied to by mail and such of them as are believed to be of possible interest to other readers will be published in these columns.

Seeks Information on Vehicle Painting

To the Editor: We have read the article on Synthetic Enamels in your June issue and would like to ask a few questions about the painting of trucks.

We have a fleet of 20 trucks which we use for milk delivery. At the present time we are having the painting and lettering done by an outside painter. For some time we have been thinking of securing a painter to keep the trucks in first-class condition so far as painting is concerned. Along with this he would do touch-up work around the plant.

Would you advise using the spray system for a beginner in painting trucks? How much equipment and what kind of a room would it take? Is there any place where we could send one of our men to get special training in the handling of spray guns? Would you consider it, for the size of our fleet, a money-saving proposition? We had in mind securing the lettering from some company in the form of decal transfers. What do you advise?—L. C., Baton Rogue, La.

Answer: Providing that you have enough other work around the plant to keep one man busy, we would certainly advise you to put this man on for painting the trucks as well.

While there are many "tricks" to learn in spray-painting, mostly by experience, we believe that the leading manufacturers of spray-guns and synthetic enamels will be glad to help you "break in" your man, and that you should have no difficulty, except for a short time.

As to special equipment, all that you need is a room that is fairly dust-proof—or you can partition off part of the shop, using tarpaulins. By wetting these with water, also the floor, before painting, there should be no trouble on account of dust settling. The only other equipment you will need is a suitable air-compressor, regulator, hose and a couple of spray guns.

Synthetic enamels can in many cases be applied directly over the old finish, if it is in good condition. All that is necessary is to sand it down well, to provide "tooth" for the new paint. In bad cases, or on new work, it is advisable to use a special primer, which you can get from the same source of supply. These enamels can also be *brushed* on with success. In fact, we know of some fleets who are doing all brush work.

Of course, there are other incidentals necessary, such as sanding, masking, puttying, glazing, etc., but a good painter will not take long to master the job, especially if he has the counsel of some representative of a good company.

With reference to the lettering, decals have been found very satisfactory. However, if a large number of duplicates are not to be used, hand lettering might be just as inexpensive—this depends on volume, of course, and the intricacy of the design also enters into it.

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Literature Wanted! Subject: Truck Springs

Question: Have you any data relative to laminated leaf springs for trucks? We are particularly interested in setting, shaping, tempering and other data for the practical mechanic. Or, do you know of any book or pamphlet on modern methods of spring manufacture? We have been trying to dig up data of this kind for a year, and have been unsuccessful, so far.—G. F. M., New York, N. Y.

Answer: The only thing we have is our Question-of-the-Month Summary on "Spring Maintenance." We are sending you a copy, although you are not entitled to one, inasmuch as you did not participate in it.

We do not know of any published literature on this subject, and if anyone does, we'd be glad to hear of it. Should any of the spring manufacturers have anything of this nature, the Editor would be glad to receive it. May we hear from you?

You May Not Believe It!

(But It's True)

THE FACT:

WHEN jacking up one wheel of a loaded vehicle, the ACTUAL load on the jack is NOT 25 per cent of the gross weight, as is commonly believed, but is sometimes as high as 65 per cent of the gross weight. . . . We are assuming, of course, that the load is evenly distributed.

THE PROOF:

THE reason for this, states H. R. Rosenberry, Chief Engineer for Simmons Manufacturing Co., is because as the axle is being raised the jack assumes more and more of the total truck weight. . . . For example, tests were made on a truck weighing 15,000 pounds gross. When the ram of the jack (a hydraulic jack, of course) was raised 6½ inches, the weight on the jack, carefully measured, amounted to 9,500 pounds or 63 per cent of the gross weight of the truck. . . . If you are using a 2-ton jack for loads of this kind, it's not the safe thing to do! A 4-ton jack, at least, should be used in this case.

More Dope on Lubrication for Truck Springs

By J. B. Marshall, Supt.

Municipal Plant Garage, City of Chicago, Ill.

"TO the Editor: May I volunteer the following information on your question: 'Should Truck Springs Be Lubricated?'

"We do *not* permit truck springs to be lubricated, believing that a unit of friction should *not* be lubricated. A spring has a certain number of square inches of friction surface, the same as a brake or a clutch, and I ask, 'Why should it be reduced by lubrication?'

"I suggest that if anybody is troubled with spring breakage on any particular unit, including passenger cars, just *eliminate* spring leaf lubrication and watch the results. However, the spring shackles and pins *must* be lubricated.

"I talked with the owner of one of the largest and oldest spring repair companies in Chicago and he told me that spring leaf lubrication was good business and he recommended it. 'Good business for whom?' I asked him. His answer was 'Good business for us.'

"I believe that flat or 'dead' springs are also the result of spring leaf lubrication. For example, a new, lubricated spring on a 5-ton Pierce-Arrow truck will show a sag of 2¼ inches with a balanced load, when compared with a dry, old spring, when standing still. This same spring, after we took it apart and washed the leaves with gasoline, raised the side of the truck three-quarters of an inch higher than the old spring, with the same load. This happened to us on one job. This, of course, is only *one man's* opinion."

●

How to Inflate Dual-Pneumatics?

Question: We are in the habit of keeping more air in the outside dual tire, where used, because of the crown in the road. We notice that Mr. Thomas Price, in an article on page 20 of your March issue, does just the reverse. We would appreciate more information about this and would like to know how satisfactory it is.—J. C. W., Oklahoma City, Okla.

Answer: Some tire engineers claim that dual pneumatics should be inflated *equally*. The more popular method is to carry about five pounds more air on the *outside* tire and let it go at that. This is based, of course, on the premise that both tires are worn *equally*. As this difference in pressure is only for the purpose of equalizing road crown, it should be noted that equal pressures are the thing to have, when travelling on flat concrete. Then both tires will carry equal loads.

Where tires having different degrees of tread wear are used on the same wheel of a dual job, the more worn tire should be placed on the *inside*. If the more worn tire is used on the *outside*, then the inside tire will carry more of its share of the load, and the outside tire will wear still further, as it will only make partial contact with the road.

We are sending you under separate cover a copy of a "Truck Tire Handbook," which gives a lot of data on the use of dual pneumatics. (*Should other operators desire a copy, a line to the Editor will bring one free of cost. Just write to the Editor and ask for a "Truck Tire Handbook"*).

Aluminum Paint for Wood-Priming

F. L. BROWNE, U. S. Forest Products Laboratory, writing in a recent issue of *Industrial and Engineering Chemistry* says: "Repeated comparisons of the durability of white paints on wood when applied in the customary manner, using the white paint itself for the primer, consistently demonstrated a distinct superiority in service for paint applied over aluminum primer.

The improvement in durability was manifested by a retardation in the rate at which paint coatings, embrittled with age, flaked from the bands of dense, horny summer-wood present in softwood lumber.

The benefit gained by priming with aluminum paint was greatest for woods that have much summer-wood, such as Southern Yellow Pine and Douglas Fir. When repainting was neglected for some time, coatings applied over aluminum primer suffered less damage and the surfaces were then more easily and durably repainted."

●

How Brooklyn Operator Tests Brakes

A BRAKE testing device which is described by engineers as ideal for its accuracy and simplicity is employed by the Brooklyn Edison Co., of Brooklyn, N. Y. This public utilities corporation employs a large fleet of cars which is kept in top notch condition.

This device consists of a fifth wheel upon which is mounted a speedometer that is checked for exactness by the New York Police Department as well as the Stewart-Warner Co., makers of the instrument.

When the brakes are applied a gun is fired, discharging a slug against the ground and leaving a distinct mark. The speedometer needle is stopped at the speed at which the car was running when the brakes were applied. It is simple then, to measure from the mark made by the gun to the point directly below the gun, where the car was brought to a stop. Thus the exact speed of the car is kown as well as the exact number of feet and inches in which the stop was made.

The fifth wheel is counterweighted so that it follows the ground accurately. A recent test on the Hudson car shown above recorded stops in satisfactorily short distances, averaging about half the distance considered satisfactory by police departments, according to Hudson officials.

THINK OF IT!

ALL material listed on this page has been personally selected and is recommended by your Editor. Executives of automotive fleets may obtain any or all of them by marking the numbers on the coupon below. You have our assurance that this will not obligate you in any way. And, when we say that this material is hand-picked, we mean . . .

HAND-PICKED!

230. **Simplified Truck-Cost System.** When we say it's that, it's just *that*, and nothing else. . . . A leading truck manufacturer has recently designed a new, simplified truck-cost system, using only *two* forms—a daily record and a monthly one. . . . Of course, each form is made out individually to cover each truck, and we will tell you frankly that it was designed particularly for the *smaller* fleet operator, with not-so-many units in his fleet. . . . This system is now being distributed to readers of FLEET OWNER, without cost, obligation or salesmen. . . . When sending us the coupon on the bottom of this page, include Number 230, if you'd like to get a book of these forms—enough for an entire month. . . . If you'd like enough for a year, perhaps we can get that for you, too.

•

231. **What Every Fleet Owner Wants to Know.** There is the title, the rest of it being "about the proper care of Spark Plugs". . . . This is a 20-page book that really tells you things you "want to know." . . . *We* know that during the past several years many changes have taken place in the field of automotive engineering and designing. . . . Trends and principles that were "standard" a few years ago are today old-fashioned. . . . The book outlines these, and also gives a simplified explanation of the Heat Range System, Selecting the Spark Plug, Servicing Spark Plugs, Testing Spark Plugs, etc. . . . And there's only a couple of pages of advertising in it, the rest of it being good, meaty, everyday information. . . . A copy will be *mailed* to you if you mention Number 231 on our coupon; Brother Fischer assures you of that.

232. **Piston Replacement?** Instead of scratching your head, wondering which type of piston to use on your next motor overhaul, it might be well to read this latest pamphlet, telling all the things you would like to know about alloy pistons. . . . It covers such subjects as: T-Slot Types, Cam Grinding, Lo-Ex Alloys and the new Alumilite Finish. . . . Of course it's put out by the folks who would like to see you use aluminum pistons, which is fair enough. . . . Everyone should read *both* sides of the piston controversy—this is one of them. If you want a copy ask for Number 232, and we'll see that they *mail* it to you, free.

•

233. **More About Pistons.** Since we've always enjoyed the reputation of being fair-minded, it is only fitting and proper that we give you something concerning the "other side" of the piston story. . . . This is a pamphlet on cast-iron pistons, the title being *"Facts About Tin-Plated Pistons."* . . . We are giving you both sides, so that like in choosing one of Ziegfeld's chorus gals, you can "shut your eyes and take your pick." . . . Number 233 is the designation for *"Facts About Tin-Plated Pistons."* . . . And it's free for the asking, like other stuff on this page.

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234. **Foreign Bodies in Oil.** Here's another one of these "technical bulletins" that is not so "technical" after all, since even *we* can read it without wondering what it's all about. . . . If you have been staying awake nights wondering whether that sludge you found the last time you dropped an oil pan, was 600-W, cup-grease, or the graphite you used in the motor oil, this bulletin will attempt to set your fears at rest. . . . It's not *their* fault if your crankcase looks more like a rear-end, the graphite people tell us. . . . You might believe that "all is gold that glitters" but they want you to understand that "all is *not* graphite that is black." . . . In brief, that's what this bulletin tries to tell you, in addition to giving an interesting description of what crankcase sludge really is. . . . Number 234 on our coupon brings you a copy, via the postman, free and quickly.

•

235. **The Ideal Brake Lining?** There is only one place where you will find the ideal frictional material, says a prominent brake lining engineer, and that is on the wheels of the chariot of Jesus Christ. . . . He goes on to tell us about *his* new type of brake lining, which is as near to the ideal as modern manufacture has thus far permitted, so he says. . . . It's an entirely new product and it's a combination of woven-and-moulded; in this case the compounding material is *woven* into the lining, in the form of thin strips. . . . He calls it "woven and compressed" which probably is a better description. . . . At any rate, we feel that you should know about it, since it's brand new. . . . If you mention Number 235, we'll try to get them to send you a small sample showing various stages of manufacture—or at least some literature that will tell you about it in detail. . . . No cost, and no high pressure salesmanship, either!

•

236. **What! No Uniforms?** Several fleet men found our article on Uniforms so interesting last month, that they asked us to get them a catalog. . . . Always obliging, we sent them *two*, instead of one, since we're the type that passes the pepper, too, when one asks for the salt. . . . These catalogs have been especially selected because they cater to fleet users. They offer a wide variety of *summer* uniforms in sensible and durable fabrics. . . . If your old uniforms are wearing out, if your drivers never wore uniforms, or if you're just curious, you may get free copies of these catalogs, without obligation, by mentioning Number 236 on our coupon below.

•

237. **Something for the Tire Man.** Most fleets have one or two men who do nothing but look after tires. In the smaller fleets, the tire man has other duties. . . . A new, handsome catalog has recently been published by Schrader that illustrates and describes all of the Schrader "Airline" products, which means tire valves, valve-cores, valve caps, chucks, gauges and various tire-servicing equipment. . . . In order that the tire man of every fleet may have one, we are glad to mention it in this department. . . . Remember, it's free and may be secured by mentioning Number 237 on the coupon below.

•

238. **New Treads for Old.** Most everyone has been talking about Retreading during the past few months, according to the many inquiries which our Editorial Department has been receiving. . . . The best way we can answer these is to send you literature covering a popular method that is available in over 120 key cities in the United States. . . . This literature illustrates and describes the particular retreading method used by this organization and gives you a swell idea of the possibilities (and costs) of retreading the tires on *your* vehicles. . . . Ask us to send you this literature—you don't have to ask us to refrain from sending a salesman, as all of this comes by *mail* and Uncle Sam's employees do *no* selling, you know. . . . Number 238 brings the retreading literature—that is, if you use the coupon herewith.

The Editor, FLEET OWNER, ... 1935
90 West St., New York, N. Y.

Kindly send me without cost or obligation the following literature mentioned in the July issue. (Order by number. Nothing will be sent unless firm name is given)

.....

.....

Name of Fleet .....

Address .....

City and State .....

Your Name ..... Position .....

Number of Vehicles Operated .....

M-H OFFERS NEW ALL-WHEEL DRIVES

A NEW and complete line of four and six-wheel-drive motor trucks, ranging in gross capacity from 8,400 to 52,000 pounds, is announced by the Marmon-Herrington Company, Inc., Indianapolis, manufacturers of all-wheel-drive trucks exclusively.

This line represents the culmination of many years of experience in the all-wheel-drive industry and includes many new features, refinements and advantages in performance, payload ability and appearance. The new models have been greatly improved, the manufacturer states.

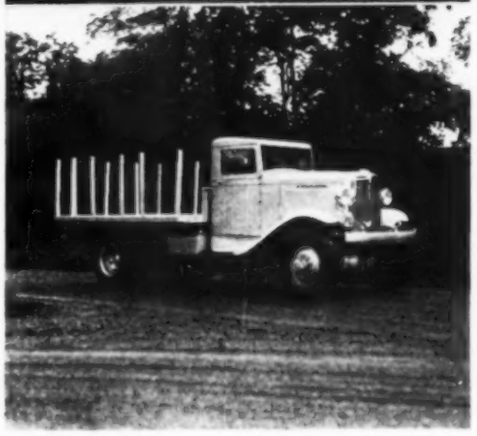
The initial announcement of the line includes twenty-one models. Thirteen of these models are four-wheel-drive vehicles, ten with gasoline engines and three with Diesel engines. The remaining eight models are six-wheel-drive units and of these eight, five have gasoline engines and three are equipped with Diesel engines. The four-wheel-drive models range in gross capacity from 8,400 to 31,200 pounds and the six-wheel-drive models from 26,500 to 52,000 pounds.

Each model is engineered so that it can be manufactured in two or more wheel-base lengths and equipped with tires of two or more sizes. Thus, an almost unlimited number of units is available—each fitting a definite purpose by giving just the right combination of size, weight and carrying capacity to the job for which it is intended.

Throughout the entire line, both engine size and power have been increased. The Diesel engines which are available on numerous models are of the latest type available and have already established outstanding records in performance and economy, the maker states. Many refinements have been made in the chasses, and the Marmon-Herrington front axle construction has been even further improved in efficiency and simplicity, according to the maker.

One of the outstanding features of the new line is the low center of gravity, lateral stability and all-around safety of all models. Frame heights have been lowered considerably. Dual rear wheels are standard equipment, while auxiliary as well as standard transmissions are built into all models—even the smaller sizes.

New radiator designs and a number of other improvements in exterior appearance have been made and the new line is looked upon as being completely up-to-date in style and modern lines. Ease of handling and comfort for driver and passengers likewise have been given special attention.



Standard model sizes and gross capacities are as follows:

Model B10-4 (four-wheel-drive)
—10,200 to 13,200 pounds
Model B20-4 (four-wheel-drive)
—11,700 to 13,200 pounds
Model B30-4 (four-wheel-drive)
—13,200 to 15,900 pounds
Model B40-4 (four-wheel-drive)
—15,900 to 19,500 pounds
Model B50-4 (four-wheel-drive)
—19,500 to 23,400 pounds
Model B60-4 (four-wheel-drive)
—19,500 to 23,400 pounds
Model B70-4 (four-wheel-drive)
—23,400 to 25,200 pounds
Model B80-4 (four-wheel-drive)
—28,200 to 30,000 pounds
Model TH415-4 (four-wheel-drive)
—28,200 to 30,000 pounds
Model TH420-4 (four-wheel-drive)
—28,200 to 31,200 pounds
Model B40-6 (six-wheel-drive)
—26,500 to 28,500 pounds
Model B70-6 (six-wheel-drive)
—32,500 pounds
Model B80-6 (six-wheel-drive)
—39,000 to 42,000 pounds
Model TH415-6 (six-wheel-drive)
—39,000 to 42,000 pounds
Model TH420-6 (six-wheel-drive)
—47,000 to 52,000 pounds
Model BD80-4
(four-wheel-drive—Diesel)
—28,200 to 30,000 pounds
Model THD415-4
(four-wheel-drive—Diesel)
—28,200 to 31,200 pounds
Model THD 420-4
(four-wheel-drive—Diesel)
—28,200 to 31,200 pounds
Model BD80-6
(six-wheel-drive—Diesel)
—39,000 to 42,000 pounds
Model THD 415-6
(six-wheel-drive—Diesel)
—39,000 to 42,000 pounds
Model THD420-6
(six-wheel-drive—Diesel)
—47,000 to 52,000 pounds

The illustrations accompanying this announcement represent two views each of Models B50-4 and B70-4. These are both four-wheel-drive units, having gross capacities of 19,500-23,400 and 23,400-25,200 pounds respectively.

These units are especially adaptable for "off-the-road" performance, and combine the ability of the ordinary rear-wheel-drive truck with the sure-footedness of the track-laying tractor, the makers state.

Model B50-4 has both standard and auxiliary transmissions and is available in two wheelbase lengths.

Model B70-4 is built in four wheelbase lengths and is available either with 9.75 x 20 or 9.75 x 22 tires. This model also has all

(*Please turn to page* 62)

• NEWS of the TRUCK INDUSTRY •

Bauman Sales Manager for White

APPOINTMENT of J. N. Bauman as General Sales Manager is announced by The White Motor Company, Cleveland, Ohio. . . . In his new position, Mr. Bauman will direct the sales activities of White through an organization of 80 direct factory branches and several hundred dealers. . . . He succeeds George F. Russell, resigned, and has been connected with White since 1922. . . . Our best to you, Mr. Bauman!

•

Makes Cross-Country Diesel Trip

AS this issue goes to press, C. L. Cummins, builder of Diesel engines, left New York City for the West Coast, in an Auburn sedan, powered by the new Cummins Diesel passenger-car engine. . . . The first leg of the journey was to White Sulphur Springs, Va., where Mr. Cummins joined the S. A. E. in their summer meeting. . . . On the 496-mile run to White Sulphur, the car averaged, it is said, 40.2 miles to the gallon of fuel oil. . . . It is expected that the trip to the coast will consume but $8.00 worth of fuel oil. No attempt at speed is being made.

•

New "Commercial" by Plymouth

A NEW type convertible automobile, designed for use as a light commercial delivery unit during business hours, and as a "family" pleasure car at other times, was presented recently by Plymouth. The new car is known as the "dual-purpose Commercial Sedan" and will undoubtedly interest certain types of fleet operators. Harry G. Moock, c/o Plymouth, at Detroit, will be glad to send you details, if you want them.

•

White Export Headquarters

EXPORT headquarters of The White Motor Company have been reestablished at the home office of the Company in Cleveland, under the direction of Robert L. Boughton, export manager. . . . For the past two years, the Studebaker Export Corporation, South Bend, Ind., has handled the overseas activities of White. . . . White's entire export organization will remain unchanged, Mr. Boughton said.

SKF Issues Ball Bearing Manual

A NEW automotive replacement ball bearing manual, to aid in determining the correct sizes and numbers of ball bearings for replacement in passenger cars, taxicabs, trucks and buses has recently been issued by SKF Industries, Inc., Philadelphia, Pa. . . . List prices, dimensions, interchangeable tables and other descriptive literature subject to constant change are covered in separate publications. . . . If you'd like a copy, address SKF Industries, Front St. & Erie Ave., Philadelphia, Pa.

•

Takes It Away to the Mill!

LOGGING operations are always tough jobs, particularly in mountainous sections of the country. . . . Witness this unit, owned by the

Madsen Motor Company of Chehalis, Wash., who reports very satisfactory operation because of its power and good brakes, in spite of its having to climb to elevations of 3,000 ft. across a long mountain range. . . . If you haven't guessed it, the tractor is one of Studebaker's new "Big Chief" models.

•

N. Y. Firm Buys 125 White School Buses

AN order for 125 White School Buses has recently been received by The White Motor Company from Childrens' Bus Service, Inc., of New York City. . . . The order, totaling $350,000, is the largest ever placed for school buses, it is claimed. . . . Childrens' School Bus Service, Inc., operates under contract with the Board of Education of New York City, and the buses will be used to transport school children; approximately 12,000 children will be carried each school day.

Chevrolet Has New "Surburban"

A NEW "Carry-All" Suburban has recently been introduced by Chevrolet. This model can readily be converted from an eight-passenger sedan-type vehicle, to a commercial transportation unit, by removing the rear and middle seats. Unlike the ordinary "station wagon," the body is of steel construction, with glass windows and leather-type upholstery. The rear closure is divided into two parts, the lower half forming a sturdy tail-gate; the upper half raises on hinges attached to the roof.

•

Details of Pass. Car Diesel

WE promised you the details of the new Cummins passenger car engine, but to date no official information has been released. . . . However, the new engine is believed to be the one used in Mr. Cummins' cross-country Auburn. This has a bore and stroke of 3¾" x 5", and develops approximately 100 h.p. at 2,500 r.p.m. . . . It is a six, and is said to weigh only 100 to 150 pounds more than the eight-cylinder gasoline engine which it replaced in the Auburn car. . . . It is also said that no changes in the chassis were necessary to adapt it to the Diesel installation.

•

Piper Succeeds Spicer at J-M

APPOINTMENT of Colonel C. M. Piper as general manager of the automotive materials department of Johns-Manville Corporation was recently announced. Col Piper succeeds J. T. Spicer, resigned, and will be in charge of the sales of brake lining, clutch facing, automobile sound deadening equipment and other automotive products. . . . He had previously been with several rubber companies. Best of success, Colonel Piper!

•

Budd Wheel & Rim Handbook

A NEW edition of the Budd Wheel & Rim Handbook has just made its appearance. . . . The information in it is for the purpose of guiding bus, truck and trailer operators in the proper selection of wheel equipment. . . . This information has been published by Budd since 1924 and kept up-to-date by periodic revisions ever since. . . . For your free copy of the new, 1935 edition, address C. L. Wenzel, care of Budd Wheel Company, Detroit, Mich. . . . Mention of FLEET OWNER always helps.

•

Simplex Adds Warehouses

NEW warehouse points at Dallas, Texas, and New York City have been added by the Simplex Piston Ring Sales Co. of America, Inc., Cleveland, O., as a result of the demand created for their new type Molium metal piston rings, announced last fall. The New York warehouse, opened April 1st, is located at 271 West 69th St., New York City. The Dallas warehouse stock is handled by the General Automotive Warehouse, 2816 Commerce St., Dallas.

LETTERS

TO THE EDITOR

WHAT! ONLY TWO FORMS?

● *To the Editor:* I always read the articles in FLEET OWNER with much interest, but in the March issue, the article entitled "We Abolished All Forms But Two" was especially interesting and I would like further information on the subject matter. . . . It bears out one of my pet contentions—"Why spend $50.00 to find out where 5c went?"

Personally, I just can't conceive of a fleet being operated with only two printed records, and I think this is worthy of further investigation. . . . I am responsible for the cost records of a fleet of 50 trucks, and it seems that I have simplified these records to the "nth" degree, but if there is a better way I want to know of it.

In my mind, this is the most interesting article you have ever published and it seems that at last there is "something new under the sun."—*Oscar B. Smith, Board of Sanitary Commissioners, Indianapolis, Ind.*

●

ENDORSES "2-FORM" SYSTEM

● *Dear Mr. Fischer:* I should like to get in a word of praise to the capabilities of one of your contributors, Mr. Thos. L. Price, whose article appeared in the March issue. . . . While I am a "stickler" for maintenance records within reason, I cannot help but admire the frankness with which Mr. Price advances his two-form system—Daily Report and Tire Records—together with the explanation of each.

As you know, records, no matter how extensive, are of no value unless carefully studied and analyzed; and eliminated when the information disseminated proves valueless. . . . From the explanation by Mr. Price of his operating policy, I can thoroughly visualize a well-balanced organization, from the stress that he places upon inspection methods and their attendant responsibilities, together with the wholesome antagonistic atmosphere that he creates between his foreman and inspector.

It is refreshing to be enabled to sense the extreme confidence of Mr. Price in his successful operation of his plant, which to me makes itself manifest in his abrupt expression of major items, which it appears he has under extreme control.

Surely Mr. Price is correct in his estimation of placing responsibility in the proper place, viz: the driver in possession of his vehicle daily knows, or should be able to sense its ailments, and so impart his knowledge to the shop inspector for verification of his suspicions. . . . The burden then rests with the mechanic under the direct supervision of the foreman, and the final analyses with the inspector, with the controversial elements passed on to the "Major-Domo," Mr. Price, or anyone in a similar capacity.

His tire record, properly reported and consistently up-to-date, is sufficient information for any intelligent and thoroughly alert supervisor. . . . Further, my previous experience allows me to easily analyze and understand the written narrative and also to presume the unwritten thought which breathes the absolute confidence of the writer in his justly deserved opinion that his methods are correct. . . . Furthermore, this position of vulnerability—not arrogance—certainly makes for a smooth, efficient and economical fleet operation and maintenance set-up. . . . Orchids for Mr. Price!—*Fred C. O'Keefe, Motor Transport Technician, Detroit, Mich.*

●

WHO CAN USE THIS?

● *Dear Mr. Fischer:* We are making a connection with a mechanical engineer who has invented a device to place in the speedometer line of any car, truck or bus, that will make the speedometer register *forward* at all times—whether the vehicle is traveling forward or backward. . . . It is absolutely fool-proof and has no working parts when going forward, and only one when backing.

This party conceived the idea of this device, after his company made a contract to lease their trucks and drivers to a contracting firm at an amount of "so much per speedometer mile". . . . This particular job was located in a place where each truck had to back up a half-mile after loading, which took a half-mile off the speedometer reading, resulting in the loss of one full mile pay for each loading. . . . With this device they are now collecting for every revolution of the wheels.

I am wondering if there is not a very large field for an item of this kind, and if you have had many inquiries regarding something of this sort? . . . Knowing that you are in touch with large fleet owners, I am taking the liberty of asking you to put this question before your many readers.—*C. F. Coons, Owner Standard Drive-It-Yourself System, St. Joseph,* Mo.

●

BUS MAN WANTS INDEX

● *To the Editor:* This letter is written in regard to your magazine, FLEET OWNER. We find a great deal of worth-while information in each issue.

We would like to know if you can give us any help in indexing the past issues. . . . I have been saving every issue and now would like to get them put into volume form. . . . One criticism that could be made about this magazine is that the titles of the various articles are not always a good clue as to what the article is about. . . . For this reason they would not be clear enough to use in an index.

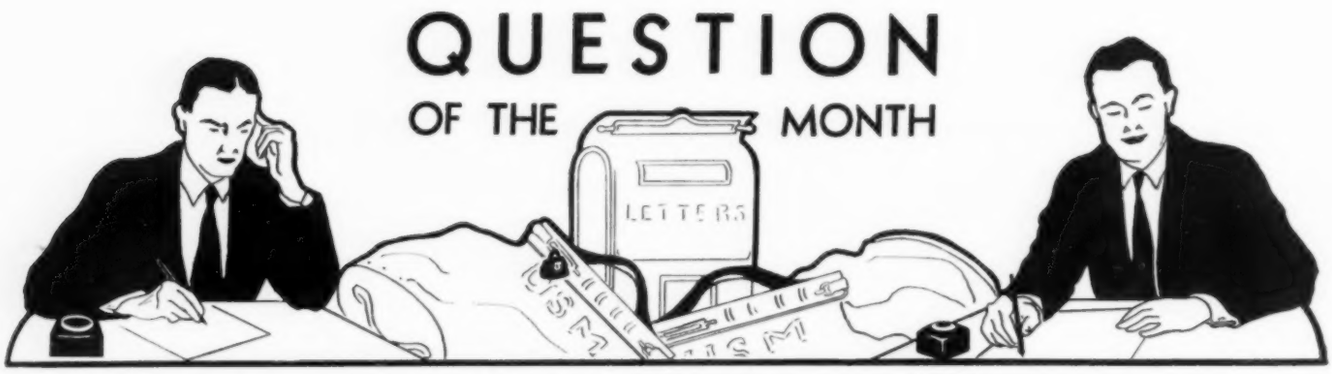
If other operators feel the need for such an index, I am sure that you will deem it advisable to make one up.—*Elias Christianson, Foreman, Mesaba Transportation Co., Hibbing, Minn.*

(EDITOR'S NOTE: *Your idea is a fine one. We have often considered doing this. . . . If a sufficient number of fleet men will write us a short letter, asking for such an index, we will be glad to have one printed, and to supply it without cost or obligation.—H. C. F.*)

●

"A PRAISEWORTHY THING"

● *To the Editor:* This opportunity is taken to express our appreciation of the good work you are doing through the columns of your publication to promote safer driving. . . . This effort on your part is highly commendable and we consider it a praiseworthy thing for you to do. . . . That there is a serious need for publicity of this nature is no longer a matter of question. Driving safely must be made a national issue and we know of no better medium than the automotive magazines to make it so. . . . Hence, your contribution to the cause is most heartening to us.—*W. C. Goldschmidt, Bear Manufacturing Co., Rock Island, Ill.*



A FEW REPLIES TO THE CONNECTING-ROD QUESTIONAIRE (No. 56):

Breaking Up of Bearing Metal Causes Grief

By Joe McLaughlin, Fleet Mgr.,
United Parcel Service, New York City.

OUR most common connecting-rod bearing trouble is the breaking up of the bearing metal itself, causing jamming, which destroys the necessary oil clearance and subsequently causes the bearing to burn out. At very rare intervals a connecting-rod will snap.

Every set of rods is aligned, and straightened, if necessary, on our own aligners, right in our own shop. In our opinion, the best method of straightening rods is to use a fixture which works on the lower part of the rod itself.

We prefer the replaceable type of connecting-rod bearing, where possible, and our source of supply is both jobbers and factory branches of the truck makers. We specify the make of connecting-rod service desired when ordering . . . Our fleet consists of 850 electric and gas trucks in the Metropolitan area of New York.

●

Not Much Trouble With Modern Bearings

By G. L. Wheatley, Supt.,
Empire Oil & Refining Co., Bartlesville, Okla.

WE have such little trouble with crooked rods in late model cars and trucks that we do not feel warranted in owning connecting-rod aligning fixtures. We formerly had complete equipment in all of our shops, years ago, but now we have such little need for it that we have dispensed with same.

Our most common connecting-rod bearing troubles are caused by flaking and chipping of the bearing metal. We have not had much trouble with burned-out bearings during the past several years.

When one bearing shows signs of flaking or chiping and the vehicle has done more than 25,000 to 35,000 miles, we generally replace all bearings. Of course, if only one burns out and all the rest are good, then only the defective bearing is replaced.

Our source of supply on rods and bearings is confined to vehicle dealers and factory branches, as we prefer to use standard, factory-equipment parts. We prefer the cast-in-rod type and use about 12 to 15 sets of bearings per month.

For straightening a rod we believe that the use of a fixture that works on the rod itself is best. Our fleet consists of 130 trucks, 110 trailers, 322 passenger cars and 70 tractors.

Governed Engines Eliminate Bearing Trouble

By John J. Paul, Mgr.
Guerin Motor Freight Line, Philadelphia, Pa.

WE get very good mileage out of our connecting-rod bearings, which we feel is as a result of our keeping our trucks governed to factory specifications.

When we do have bearing trouble, we usually find that the babbitt is broken up, possibly caused by pounding or too early a spark advance. We have every set of rods aligned before reassembling into the motors. Approximately 5 per cent of them require straightening, which is done by the Mack factory branch, using a jig and aligning fixture.

We prefer to use the replaceable type of rod-bearing, securing them from the same factory branch . . . Our fleet consists of 19 trucks, 1 passenger car and 4 trailers. We also have a Chevrolet pick-up, for service work.

●

Cast-In-Rod Run 100,000 Miles and Better

By M. S. Crossley, Supt.
City Police Department, Seattle, Wash.

EVERY set of connecting-rods is aligned before reassembly into the motors, and this work is done in our own shop. For straightening rods we use both a fixture that works low down on the rod and also one that uses a bar through the pin.

When a rod burns out or fails in service we only replace the defective ones—not all of them. Our most common trouble is the hammering or pounding out of bearings.

As to which type we prefer for replacement: We have replaced about four sets of the replaceable type after only 20,000 miles. With the cast-in-rod type we have some running 100,000 miles and better . . . We operate a fleet of 59 police cars.

●

Cold Motor Oil Causes Bent Rods

By C. F. Biggs, Foreman,
Schreeck's Ice & C. S. Co., Baker, Oregon.

IN winter, if we use an oil that is too heavy and store the vehicles in a cold garage, it is often the case that a connecting-rod will get sprung. This is particularly true when a car has to be towed, in order to start it. Other bearing troubles are caused

by dirt or cuttings getting on the surface and scoring the bearing.

We have every set of rods aligned, and straightened if necessary, before assembling motors. About 20 per cent of our rods will be found out of alignment. In our opinion, the best method of straightening rods is to use a fixture that works on the rod itself.

When rod-bearings fail we replace only the bad ones. Our source of supply is jobbers and factory branches of the truck makers. We prefer the cast-in-rod type of bearing . . . Our fleet consists of 6 trucks and 6 passenger cars.

●

Rod Bearings Control Oil Consumption

By J. V. Goodbrake, Supt. Trans.,

Rairdon Transfer & Warehouse Co., Kansas City, Mo.

WE have very little connecting-rod trouble as we pay a lot of attention to them, believing that rod-bearings, as a rule, largely control our oil consumption, and we try to keep them in condition.

We never take up on rod-bearings—only in emergencies—as we do not consider this practical from the oil consumption standpoint.

Every set of rods that goes into our motors is first aligned and straightened, if necessary. Our cylinder grinder does this work for us. When one rod goes bad, we usually replace **all**, rather than only the defective ones.

We prefer the cast-in-rod bearings and get connecting-rod service from our jobber, specifying the make which we desire . . . We operate a fleet of 35 trucks and 7 passenger cars.

●

New "Chocolate" Bearings are Doing Good Work

By Dave Buttles, Supt.,

Valley Motor Lines, Inc., Fresno, Calif.

MOST of our units are of the Diesel-engine type, and our early rod experience was not very satisfactory. However, the new type of rod-bearings with which these are now equipped, are very satisfactory. The new "chocolate" bearing metals are doing a splendid job.

We align every set of rods before assembling them into the motors and find that almost all of them require some straightening. This is done in our own shop, using a rod-aligning jig that utilizes a bar through the pin.

For replacement, we prefer the shell type, where obtainable, ordering them by trade name. We use about 4 or 5 sets of new bearings per month—in other words, bearings for 24 to 30 rods. When rod-bearings fail in service, we try to replace them in sets, if possible . . . We operate a fleet of 80 trucks and tractors, 44 trailers and 4 passenger cars.

(Please tear out and mail to The Editor, The Fleet Owner, 90 West St., New York City)

Question No. 58—Oil Filters on Engines

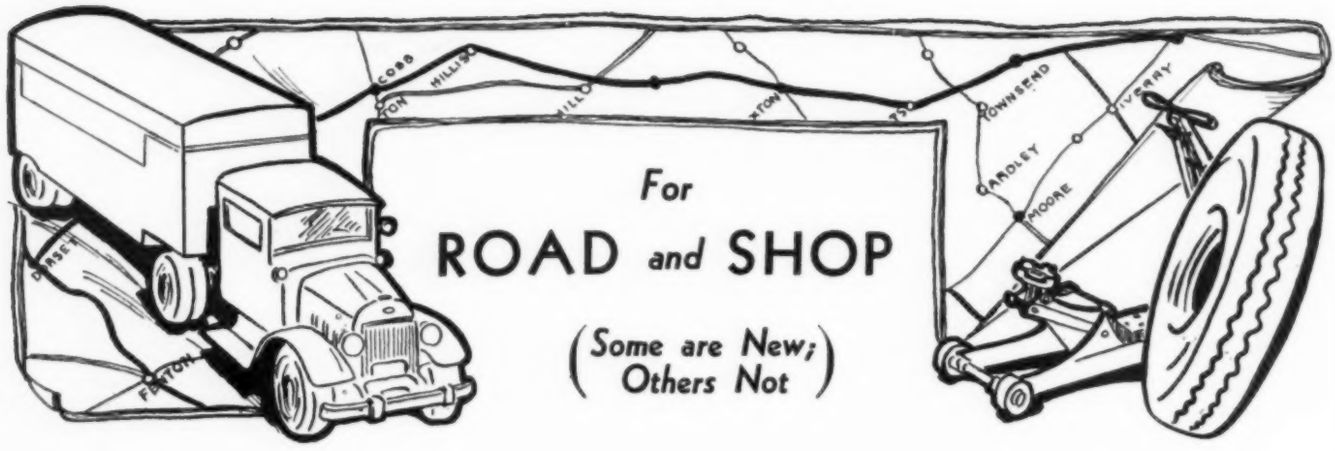
What percentage of the vehicles in your fleet are now equipped with oil filters?.....
When vehicles do not come factory-equipped, is it your practice to install oil filters?.....
If so, what make or type of oil filter do you specify?.....
What make (or makes) of oil filters are you now using?.....
Which of the above makes, in your opinion, is best for your purpose, and why? (Please explain).....
.....
When oil filters are used, how often do you change the crankcase oil?.....
When oil filters are NOT used, how often do you change crankcase oil?.....
How often do you renew the filter cartridges, felts or other components?.....
Do you find that oil filters increase the useful life of motor oil?..... If so, how much?.....
Considering all costs, do you think it pays to use oil-filters on all vehicles?.....
Do you believe that crankcase oil, if properly filtered and cleaned, will last indefinitely?.....
If not, why not? (Please explain).....
Which TYPE oil filter, in your opinion, is the best for fleet work? (Please check below)
☐ Fabric Type; ☐ Felt-Washer Type; ☐ Chemical-Element Type; ☐ Metal-Disc Type; Others.....
Do you reclaim crankcase drainings in your own shop?..... Or, do you farm-out oil reclaiming?.....
If reclaimed, what is your TOTAL cost per gallon for reclaimed oil?.....
If reclaimed, about how many gallons are reclaimed per month?.....
If you do not believe in oil reclaiming, so far as your own operation is concerned, please state briefly your reasons
.....
.....
Remarks .....
.....

How many vehicles in your fleet? (Please state below)
Trucks or Tractors ..... Trailers ..... Pass. Cars ..... Buses ..... Miscellaneous .....

Note: If you cooperate with us and fill out this questionnaire, you will be entitled to a tabulated report covering all of the answers.

Swap your Maintenance experience with other fleet operators in this easy, convenient way. We do the work. You get the benefit.

Name of Firm .....
Address .....
City and State .....
Your name .....*Position*.....



For ROAD and SHOP

(Some are New; Others Not)

NEW—Quick-Acting Air-Hose Coupler

THIS new quick-acting air-hose coupler is a product of the well-known Schrader "Airline" equipment. It provides an effective means of adapting a single air-line to varied requirements about the garage and shop.

Such equipment as spray-guns, grease-guns, blow-guns, chucks and chuck-gauges, can be interchanged quickly on the one air-line by permanently attaching this coupler to the end of the air-hose, and equipping each device with a steel adapter to fit the coupler.

Air can be instantly applied to each unit by merely snapping the check-unit on the equipment fitted with the adapter. By a slight twist of the coupler, the air is automatically cut off. The check unit has a replaceable washer and deflator that can be easily changed when necessary.

This new coupler, designated as Number 8050 in the Schrader line, is furnished complete with one adapter. Extra adapters may be obtained for additional equipment, at small cost. . . . This is a NEW product! When writing for details address A. Schrader's Son, Inc., 470 Vanderbilt Ave., Brooklyn, N. Y. . . . And if you mention FLEET OWNER, we'll appreciate it.

•

New Catalog on Spray-Painting

THE DeVilbiss Company announces a new catalog, the "DD", covering and supplementing the DeVilbiss equipment featured in the Catalog "DC".

This includes complete spray-painting equipment for exterior painting, interior decorating, and automobile refinishing; exhaust fans and booths; air hose, fluid hose and service-station equipment; spray-booths, and many other items in the extensive DeVilbiss line. Those who have been using the Catalog "DC" should not fail to replace it with one of the new catalogs, as several changes of major importance have been made and listed accordingly.

Copies of the new Catolog "DD" may be secured free from The DeVilbiss Company, Toledo, Ohio. You'll mention FLEET OWNER when writing, won't you?

Bendix Offers New Vacuum Pump

THE perfection of a vacuum pump for power brakes, which is totally independent of engine speeds, was announced recently by The Bendix Products Corporation, South Bend, Ind. Factory officials stated that the new vacuum pump is the first that will perform with perfect efficiency at high motor speeds.

The new device, perfected after months of engineering research and experiments, has been named the "Bendix Convac Vacuum Pump." It operates on the eccentric, centrifugally-sliding vane principle and produces full 28 inches of vacuum at 3,000 r.p.m., while at 200 r.p.m. the vacuum drops only to 25 inches.

"The Bendix Convac pump has long been awaited by heavy vehicle operations," said Mr. Willis, vice-president. "Up to this time vacuum pumps have not delivered full efficiency at high engine speeds. Natural manifold vacuum, of course, varies with throttle position being of maximum value under closed throttle. In practice, owing to various leakages, the system vacuum drops slowly under prolonged open-throttle operation, and a number of seconds may elapse before this vacuum may be built up to its full value after the throttle is closed. This lag is objectionable.

"The lag cannot happen with the new Convac vacuum pump. It does its job all the time, delivers full power all the time. Brakes may be applied repeatedly with full force with the throttle wide open. This feature is especially valuable in certain twin-engined, dual-drive installations, where quick maneuverability of the vehicle may be accomplished by application of brakes on either side at wide open throttle. The Convac pump also offers great advantages in power-breaking applications to long tractor-trailer trains and where closely repeated brake applications are employed."

Mr. Willis stated that the new Convac vacuum pump is available for immediate installation. Fleet men having trouble with overworked intake manifolds will undoubtedly want to get full details of the new pump. When writing to Bendix Products, South Bend, Ind., mention of FLEET OWNER will speed up your inquiry, and will be appreciated.

•

Radiator Core Replacement Catalog

A NEW catalog has recently been issued, covering replacement radiator cores for all makes of cars and trucks. It lists all radiators by makes of vehicles, gives over-all dimensions of cores, list prices and other pertinent information. . . . For your free copy address Fedders Manufacturing Co., Inc., Buffalo, N. Y. You'll mention FLEET OWNER when writing, won't you?

•

New Driver's Uniform Catalog

NUMEROUS requests for further information, in response to our article on summer uniforms last May, prompt us to mention and describe a new catalog, recently called to our attention.

In it, the manufacturer offers a complete line of driver's uniforms, shop uniforms, expressmen's jumpers, caps, car cover-alls, etc. Besides illustrating, describing and pricing each type of uniform, actual samples of materials are included, so that selection is quickly and easily made, and misunderstandings eliminated.

This line is unusually complete and in the catalog may be found uniforms to fit every need in the transportation field—including truck, bus and taxicab operations. Laundries, dairies, bakeries and other vocational fleets have not been overlooked.

If you'd like a copy of this catalog, which will be *mailed* without cost or obligation, address Star Uniform Mfg. Company, 66 Varick Avenue, Brooklyn, N. Y. . . . Mention of FLEET OWNER is always appreciated.

Simmons Hydraulic Floor Jack

AFTER two years of development and testing, the Simmons Manufacturing Company, Cleveland, Ohio, announces the addition of a new hydraulic garage floor jack to its Silver King Hydraulic Jack line.

Designed to handle all lifting jobs, for passenger car, truck, bus or industrial use, the new jack, with a lift of 17" and a low starting height of 5", handles all knee-action cars without the use of additional accessories, the makers state.

Finger-tip control is provided by a release valve at the end of a 46" handle which is also equipped with a 4-position locking device that enables the operator to use any one of four angles to "dolly" the jack into position. Its makers claim easy, one-hand operation. Only 21 full strokes are required to raise the jack to its full height. Short fractional strokes may be used to raise the load in close quarters.

Now in production, the new jack is manufactured in 5-ton capacity but is tested at the factory, as are all Silver King Jacks, for 50% over its rated capacity to provide ample reserve power under all loads. Simplicity of design, with few working parts, according to Simmons, assures low maintenance cost.

Complete descriptive literature may be obtained on request to the Simmons Manufacturing Company, Cleveland, Ohio. Mention of FLEET OWNER, when writing, is always appreciated.

•

Six Bulletins from Gar Wood to You

AN assortment of six illustrated bulletins has recently been issued by Gar Wood Industries, Inc., makers of hydraulic hoists, dump bodies, winches, derricks, power-take-offs, etc.; these are listed as follows:

No. 7—Complete line of hoists, dump bodies, platform bodies, hi-lift units for 1½-ton truck chassis.

No. 12—Garbage and rubbish bodies used in various cities and towns, described and illustrated.

No. W1A—New line of Wood-Mead-Morrison winches and pole derricks for motor trucks.

No W2A—Power take-off data covering the complete line of Wood-Mead-Morrison take-offs for motor trucks.

No. W3—Electric car puller units, described and illustrated. These car pullers are widely used for moving coal cars, freight cars, barges on truck sidings.

No. 2—Wood underbody slant type hydraulic hoists for motor trucks.

When writing for free copies of any of the above bulletins, order by number and if you mention FLEET OWNER, it will speed up the request. Address Gar Wood Industries, Inc. 7924 Riopelle St., Detroit, Mich.

•

Two New Spray Guns

THE perfection of two new spray guns, "Thor" models 5 and 6, has been announced by the Binks Manufacturing Company, 3140 Carroll Avenue, Chicago, Ill. The No. 5 is a touch-up and shading gun while the No. 6 is a combination touch-up and general service gun.

These guns have been designed to meet the need for a touch-up gun with an adjustable spray that could be easily adjusted while the operator sprayed—a spray that could be widened or narrowed as it moved over the surface being finished. This spray adjustment is accomplished by means of a screw on the side, just behind the nozzle head.

These new developments give a choice of different styles in touch-up guns, the No. 5 being equipped with an overhead trigger and the No. 6 with the conventional pistol grip. The overhead trigger has been curved to fit the index finger, making for greater comfort and closer control, which is said to permit a man to spray longer and faster without tiring.

Further details, if you want them, can be obtained from Binks, address above. And if you mention FLEET OWNER, they'll be grateful . . . and so will we.

•

Two New Goodrich Products

TWO new items, Radiator Stop Leak and Auto Top Seal, have been added to the accessory line of The B. F. Goodrich Company, Akron, Ohio. These products round out the chemical line of the company's auto accessories.

The "Goodrich Radiator Stop Leak" has a metallic base and is easy to use. Merely pouring it into the radiator does the job quickly and safely, it is claimed. Its powdered form goes into solution and fills up the holes in the radiator, making a permanent repair, the makers state. Put up in 1" by 4" celluloid composition tubes with metal screw-top caps, one capsule contains sufficient solder to seal the leaks in an ordinary radiator, we are informed.

The "Auto Top Seal" is put up in 1" by 6" lithographed tubes. The material is recommended for sealing cracks around the molding and for binding top material. It is equally adapted for use on drip molding and cracked ignition wires. It dries hard in about 30 minutes and does not spot, factory engineers state.

For further details about these new products, address B. F. Goodrich Company, Akron, Ohio. . . . Mention of FLEET OWNER always helps.

•

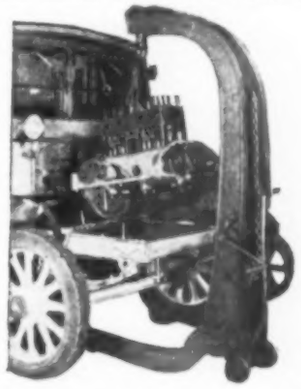
Crane Serves Many Purposes

PORTABLE floor cranes are being used to advantage in many ways in fleet maintenance departments throughout the country, since, no matter where the vehicle may be, the crane can be taken to the work—instead of taking the work to the crane.

The Canton Crane, illustrated here, is made of semi-steel, including base-casting, projecting arms and gears. The chain is electric-welded steel and the hook, block, axle, fork and yoke are drop-forgings. All four wheels are mounted on roller bearings.

In operation, the load is raised with the lifting crank and can be locked in any position by means of a ratchet and pawl. A safety friction load brake is also available, which holds the load automatically at any point, without touching ratchet or pawl, and without any effort on the part of the operator.

Canton Cranes are available in 8 different sizes, with lifting capacities

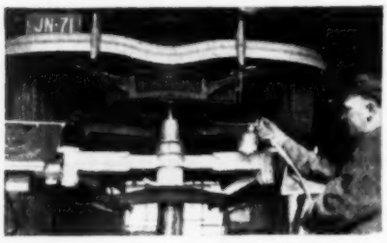


from 2,000 to 6,000 lbs. A handy pocket-size catalog illustrates and describes all models. For free copy write to Canton Foundry & Machine Co., Canton, Ohio. . . . Eastern operators can get quicker service by writing to the New York City office at 401 Broadway. . . . You'll mention FLEET OWNER when writing, won't you?

New Jacks Help in Removing Squeaks

SPRING "squeaks" constitute one of the most troublesome of lubrication problems. In order to eliminate these spring "squeaks," which is particularly difficult on new models, it is necessary to open the spring leaves sufficiently to permit a thorough job of oil spraying.

This can be accomplished easily by using a piece of "two by four" about 12" long in raising the front end of the car. The "two by four" should



be placed under the frame in front of the axle as illustrated. When raised with the jack shown, the wheels drop sufficiently to open the spring leaves and allow complete penetration of lubricant between the spring leaves.

For the rear of the car, the "two by four" should be set under the center spring-clips.

Many of the new cars have elaborate spring covers which make spring lubrication impossible unless spring leaves are opened in the manner suggested above.

Complete information on "Pit-Lift" Jacks may be obtained on request to the Simmons Manufacturing Company, Cleveland, Ohio. Why not tell them you saw it in FLEET OWNER? It will be quite helpful, rest assured.

•

New Book on "Valve Servicing"

EVERY service man who at one time or another encountered problems in the replacement, adjustment and servicing of automotive valves will welcome the new book "Automotive Engine Valves and Their Servicing," by Walter Trefz, Service Engineer, Aluminum Industries, Inc.

In its 85 pages with many easily understood illustrations, the book covers every possible reason for valve failure and faulty operation, together with the methods for correcting them. The treatise is replete with interesting discussions concerning the varying service conditions under which valves and valve parts are often obliged to perform.

An idea of the possible helpfulness of the book may be obtained from some samples of the topics covered, as follows: The Effect of Heat on Valves, Valves and Lubrication, Operating Conditions, Valve Servicing, Refacing the Valve (including a discussion of the valve refacer machine), Rocker Arms, and Installation and Care of Valves.

This book is a most comprehensive and recent treatise on the care and maintenance of valves. There is no advertising matter included. The book is intended to help service men raise the standard of their valve work—and, if it accomplishes this, Aluminum Industries, Inc., will feel that the work entailed has not been in vain. For your free copy mention FLEET OWNER and address Aluminum Industries, Inc., Cincinnati, Ohio.

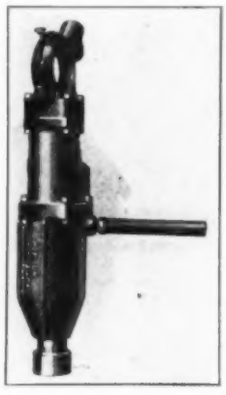
•

Ingersoll-Rand Pott Impact Wrench

THIS new type of wrench, which operates on an entirely different principle, that of "impact," can now be furnished with a reversible mechanism, so that it can be used both for applying and removing nuts. The reversing is accomplished by shifting gears instead of reversing the air motor.

Another feature that has been added is the air-cooling of the accumulator, which prevents overheating and results in much longer life, the makers state.

As recently announced in these columns, this new wrench runs nuts on or off at a speed of approximately 600 to 700 r.p.m. and 1200 to 1400



impacts per minute, tightening or loosening.

As torque is applied to the accumulator (rubber) the twisting action shortens the rubber section, thus lifting the hammer from its seat. The energy stored in the accumulator drives the hammer forward so that it delivers a powerful rotary blow to the anvil, on the end of which is attached a chuck. These torsional impacts occurring at the rate of 1200 to 1400 per minute, exert a powerful turning effect.

This type of turning action, new to a power wrench, makes it possible to remove nuts which could not be taken off except by splitting with a chisel or burning with a torch, it is claimed.

A new 16-page bulletin has just been issued. It shows illustrations of the impact wrench being employed at a wide variety of tasks. Copies may be obtained from Ingersoll-Rand Co., 11 Broadway, New York City. Please mention FLEET OWNER when writing for your free copy.

For Removing Rust from Chrome

AND here's a new product which is claimed to dissolve rust formations on chromium-plated bumpers, radiator shells, grills, headlamps, etc. It is called "Corrosol" and is made by The International Rust-proof Corporation, Cleveland, Ohio.

The Corrosol Kit contains three liquids; Number 1, which is claimed to dissolve the rust; Number 2 is a neutralizer; and Number 3 (Krome-Kote) is a transparent, protective coating which, when applied, will retard further rusting, it is claimed.

It is said that from 12 to 15 minutes are required to completely de-rust and Krome-Kote the average car, with an average material cost of 17 cents. While this product will remove rust, it is claimed *not* to remove paint. Descriptive literature may be obtained by addressing the above Company and mentioning FLEET OWNER.

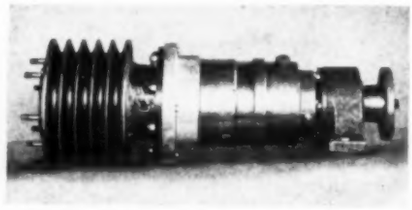
•

Davey Power Take-Off

IN most kinds of maintenance work, executives are giving increasing thought to self-contained units which can be moved quickly to the job and away again on their own power, and that can be stripped of excess weight. One such development, by Davey Compressor Company, Inc., Kent, Ohio, greatly increases the usefulness of the motor truck.

This device is the Davey Power Take-off, illustrated here, an invention of Paul H. Davey. It was first employed in driving an air compressor mounted on a truck chassis, by means of the truck motor itself. It is equally adaptable for operating other kinds of truck-mounted machinery, however, such as pumps, refrigerating systems, winches, portable generating plants for lighting systems, arc welders, etc., and its uses are increasing steadily.

The Power Take-off operates from the truck drive-shaft by a clutch and is controlled from the driver's cab. A pull of the lever engages the clutch, applying the full power of the truck motor to operation of compressor or

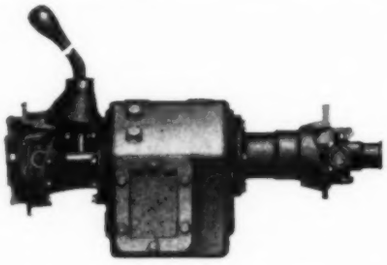


other equipment, through a sheave and V-belts.

Weight is greatly reduced, and operations simplified, through elimination of a separate motor to operate compressor or other unit. The company markets this equipment independently of its other products when desired. Full details, literature, etc., may be obtained without obligation. Write to Davey Compressor Co., Kent., Ohio. . . . They'll want to know where you saw it, so you'll mention FLEET OWNER, won't you?

Compound Transmission for Trucks

THE H. S. Watson Company has announced the production of a new compound transmission for Ford and Chevrolet trucks. This drive is said to be the only existing over-under-direct available for 1934 and 1935



models. With it, 12 gear ratios giving maximum speed or greater power are all times available.

Entirely new gearing principles are said to be involved. Actual manufacture is now going ahead in the Brown-Lipe factories, it is said. Interested truck operators or fleet owners can obtain added information by addressing the Watson Company at 525 4th Street. San Francisco, California.

•

Marvel Announces Fuel Injector

A NEW fuel-injector, supplanting the present carburetion system in several types of U. S. Army airplanes, has been announced by the Army Air Corps. . . . It is manufactured by The Marvel Carburetor Company. The new device is considered a direct step towards the Diesel principle for extremely long-range airplanes of the commercial type, which are now under consideration for trans-oceanic service.

•

New Type Fire Extinguisher

THE Garfire Gun, illustrated here, is a new development in fire extinguishing devices. It uses Garrison DuGas compound—a dry material. Hence there is nothing to freeze or evaporate; nothing to corrode or deteriorate, the makers state.

In operation, the compound cuts off the supply of oxygen without which fire cannot live. At the same time it

cools the heated materials and insulates them against re-ignition. Although death to fire, it is harmless to persons and materials, the manufacturers say.

Should the gun become empty through actual use, a new projector filled with the compound can be conveniently obtained at a low cost—or, the compound may be obtained in bulk, making it possible to utilize the original projector.

For further details regarding this new, low-priced fire-fighting device, address Garrison Engineering Corporation, Waterbury, Conn. Mention of FLEET OWNER will be appreciated.

•

Goodrich Announces "Commercial 15"

A NEW low-pressure tire, the Safety Silvertown "Commercial 15" for half-ton, 112-inch wheelbase trucks is announced by The B. F. Goodrich Company, Akron, Ohio. The new "Gold and Black" Tube is used in the assembly.

It is not just an ordinary automobile tire re-designed for truck uses, but a tire specifically built for the half-ton, 112-inch wheelbase delivery trucks, the makers state. It has the combined advantages of an automobile tire and a truck tire, properly balanced to give greater load-carrying capacity, longer wear, and more protection against bruises, it is claimed.

The new tire is sized for a 15-inch diameter wheel, with standard rim.

Carrying 15 to 24 pounds air pressure, depending on the load, the "Commercial 15" is designed as nearly round as possible so the air pressure will be exerted equally in all directions, thus providing the greatest amount of deflection. When properly inflated, this tire can carry a normal gross load of from 960 to 1,350 pounds, providing ample payload carrying capacity, the makers state.

An interesting booklet that illustrates, describes and provides test data covering the new "Commercial 15" tire, has just been issued. For your free copy write B. F. Goodrich Company, Akron, Ohio. You'll mention FLEET OWNER, won't you?

•

Amco Lining in Rolls

THIS brake lining material combines the tensile strength and flexibility of a woven lining, with the hardness and uniformity of moulded lining, it is claimed. The maker also states that it is flexible enough to be handled in rolls, yet is uniform in braking qualities.

Amco Roll Brake Lining is made by a process in which woven strands of asbestos yarn and brass wire are treated with an oil-and-water-proofing compound; then the friction material is forced into and between the strands of the cloth, after which it is folded and formed under high pressure and heat.

Such is the manufacturer's description; they further state that its high frictional compound content minimizes the likelihood of scoring

brake drums and insures increased lining life, as well as longer periods between adjustments.

Further information and samples showing separate stages of manufacture, may be obtained free on request. Write to Asbestos Manufacturing Co., 510 Sabine St., Huntington, Ind. . . . Mention of FLEET OWNER is always appreciated.

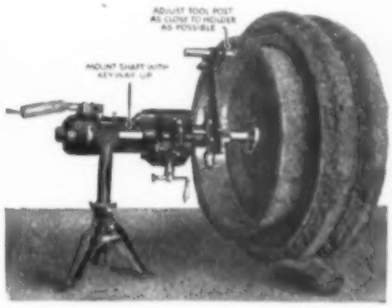
•

Stiles Brake Drum Lathe

IN this type of portable brake drum lathe, the cutter revolves, instead of the wheel. The compactness of the outfit makes it possible to take the lathe out (as you would a portable cylinder boring bar) and machine large truck drums while they are resting on the floor, exactly where removed from the truck.

Attachments are available, also, for mounting wheels on the lathe itself, if desired. It will handle, the makers say, all types of brake drums and flywheels, and is low in initial cost, automatic in operation and free from chatter.

The feed-screw is micrometer-graduated and the hardened one-piece center mandrel and split cones insure accuracy, it is claimed. The universal motor automatically regulates cutting speed and there are two gear changes. The makers further claim that it will machine four passenger-car drums in approximately 35 minutes.



For interesting folder and list prices address Stiles-Medart Company, 3535 DeKalb St., St. Louis, Mo. . . . Eastern operators can get quicker service by writing to their N. Y. representative, E. W. Baetge, 33-24 Sixty-Ninth St., Jackson Heights, L. I., N. Y.

MAINTAINING A PUBLIC-UTILITY FLEET

(*Continued from page* 31)

climbing in and out.

Most of the greasing is done on the "graveyard" shift. Two greasers coming on at 11 P.M. devote their time exclusively to this work, handling about 20 cars per night. They also check transmissions, differentials, batteries and tires and make notes of difficulties discovered underneath the cars, which memos are placed on the shop foreman's desk. This saves a lot of time for the day staff.

This fleet garage is one of the few in the region operating on a 24-hour basis. The night crew is made up of four mechanics, two greasers and two wash-rack men. The Company finds all-night operation the least expensive way of handling a fleet of this size. Without it, a lot more equipment would be required and the efficiency of other departments would be impaired.

Practically the entire storage garage and service floor has been converted into a modified wash rack. The Company has a power washer, but during the muddy seasons it often becomes impossible to keep all of the 200 units cleaned up. The problem was solved by putting in hot and cold water taps at intervals of 40 feet all around the building. The city pressure, 85 pounds, is sufficient to wash off the worst of the mud from the wheels and chassis. The work being done at night, mud removal residue presents no serious problem. It is merely allowed to dry and is swept out by the janitors the first thing in the morning.

With this arrangement, it is possible to partially wash between 40 and 50 units per man in a single night. Where the wash rack alone was used, 16 vehicles was the maximum number that could be washed by one man, nearly all jobs requiring 30 minutes.

Another efficiency and health feature of the garage is use of a floor tunnel system for removing heavier-than-air gases. A tunnel runs under the shop floor, having steel gratings in it. An exhaust fan pulls the gas out through this.

The Public Service garage has always been one of the best lighted in the country, practically the entire wall space being lined with windows, but the illumination has been improved by painting the walls and ceiling with aluminum paint. This product has exceptional reflection qualities.

Automatic doors are yet another time-saving device. Controlled by buttons at various places and in the oil room, a man hardly has to move out of his tracks to open them.

Heating is handled by means of an overhead blower system, which eliminates any waste of valuable floor space. The garage is large—175 feet by 220 feet, with a shop 40 by 100—but the Company needs every inch of available space.

Mr. Graham has found it profitable to maintain his own small parts department in conjunction with the repair shop. It is kept in a separate division, separated from the shop by a counter and screen partition along part of the distance. One man is responsible for the stock, the parts being checked out as they are used. This eliminates any waste due to loss or possible theft.

The stock is kept in six-foot high metal shelves rather than in the standard seven-foot sections. It was found that the seven-foot tier is too high for a man to reach and to use the top space. As a result, he either wastes the top space or the bottom shelf space, this being used as a step to reach the top. A $3,500 stock is carried and kept up by a perpetual inventory system.

For convenience and time saving in use, the shop equipment is all consolidated in a small space. Everything is unit-driven, which conserves power and eliminates dangerous shafting.

When this Company puts a new truck on the road, a daily record is kept on gasoline and oil consumption until it can be determined definitely whether or not it is giving the maximum possible mileage.

If not, the foreman experiments with it until he finds out why and corrects the difficulty. Sometimes the equipment needs different sized jets in the carburetor. Or the settings may be wrong. An exhaust gas analyzer is used to check the latter point.

The daily records show merely the number of gallons of gasoline and oil used and the mileage. Figures are used in this way because they provide for greater accuracy than records covering a longer period and because they permit getting a total at any time.

"We think it is a mistake to put new equipment in operation under the assumption that merely because it is new it will function in the best possible manner," says Mr. Graham. "The altitude where operated, the particular class of work being done and many other factors affect operation and may create a need for special adjustments or changes. We save a lot of money by finding out what is necessary *before* the cost figures start 'running wild'."

An individual truck repair record (illustrated) is also kept on every unit, showing all work done and the date. A sheet covers a period of about two years. This form serves as a check on driver reports. It was found that sometimes drivers will fail to report difficulties. For instance, if a truck hasn't been in the shop for 30,000 miles and the previous records show it had work done more frequently before this, it is brought in for a checkup.

●

Here's a Helpful Highway Safety Bill

LEGISLATION introduced in Congress to provide for means of increasing safety on highways embodies a principle supported without qualification by the National Highway Users Conference and other affiliated highway organizations.

This proposed legislation, introduced by Representative Edith Nourse Rogers, of Massachusetts, would authorize the United States Bureau of Public Roads to make a study of traffic conditions and measures for their improvement. This study would be made in cooperation with state, District of Columbia, and municipal authorities, and with other agencies.

Under the terms of the bill, a report would be submitted to Congress, within three months of the measure's enactment, on results of the study and research and on the status of uniform motor vehicle traffic laws throughout the country. The Secretary of Agriculture, who would submit the report as head of the Federal department of which the Bureau of Public Roads is a part, would transmit with it recommendations, including suggestions for legislation which "will promote the necessary uniformity" in motor vehicle traffic laws.

At a preliminary hearing on the bill, held last month at the Capitol, the supporting position of the various organizations was clearly indicated. That support of this particular legislative measure applies to all efforts sincerely directed toward the increasing of safety on the highways.

Real Lube Data Forms Now Available

(*Continued from page* 43)

to members of the Society. Regular discount rates will be quoted on quantities.

The records of the S.A.E. Lubricants Division show that the suggestion which culminated in preparation of the forms originated with L. A. Danse, of the Cadillac Motor Car Co. The sub-division appointed to carry out the suggestion consisted of Dr. K. G. Mackenzie, chairman, Texas Co.; Sydney Bevin, then of the Tide Water Oil Co.; C. M. Larson, Sinclair Refining Co.; G. A. Round, Socony Vacuum Corp.; E. W. Upham, Chrysler Corp.; H. C. Mougey, General Motors Research Laboratories, and A. L. Clayden, Sun Oil Company.

Drafts prepared by this sub-division were revised several times during the two-year period since the project was initiated, and were approved finally by the Lubricants Division at a meeting early this year, and by the Standards Committee and the Council at a later meeting.

If you would like further information concerning these forms, please direct your inquiry to the Society of Automotive Engineers, 29 West 39th Street, New York City, N. Y.

●

How 89 Fleets Fit Piston-Pins

(*Continued from page* 35)

coal companies; 1 bottling company; 1 manufacturer; 1 state highway department; 1 newspaper publisher and 3 miscellaneous fleets.

Fleet operators from 32 states in the Union participated, including some from as far West as California, Oregon and Washington; as Far North as North Dakota; as far South as Florida and Texas; and as far East and North as Maine. So you see, gentlemen, this information is *quite* representative.

"Were they small fleets or large ones?" someone is bound to ask. The answer is that they were *all sizes* of fleets. Some had fifteen, and some had several hundred vehicles. In fact, the *average* number of vehicles per participating fleet is about 99. The vehicles themselves are distributed as follows: 5,419 trucks and tractors, 490 trailers, 2,433 passenger cars, 136 buses, and 421 miscellaneous vehicles. Adding them all together, the grand total is 8,899 vehicles.

As stated previously, we have made a typewritten tabulation of this survey, for easy reference. Copies have already been furnished to those operators who participated in it. We have a few more on hand, which we will be glad to furnish, gratis, to any interested fleet operators, even though, technically, they are not entitled to it. However, since one can "catch more flies with honey than with vinegar," we are waiving our rule in this instance, the thought in mind being that perhaps after an operator once *sees* what he will get, in return for a few minutes' work each month, he will feel more like participating in a very worthy cause.

On page 51 of this issue, there is a questionnaire on a *new* subject. A new subject is "surveyed" each month. This work is done primarily for the fleet operator's benefit, and if *more* operators would participate, it would please us greatly. All you have to do is turn to that page, fill out the blank, and mail it in to the Editor, who happens to be Yours Truly. If you cannot answer all of the questions, just answer those you can, and leave the rest blank.

In return for your efforts, we will send you a tabulated, typewritten resumé of all the answers. Many

Yessir! this is the **ONLY** compound *that gives* **OVERDRIVE-UNDERDRIVE** *and* **DIRECT**

For Ford and Chevrolet Trucks, 1934 and '35 models

12 forward speeds . . . 3 reverse!

. . . it's BROWN-LIPE BUILT

Greatest Overall Economy

Fewer Engine Revolutions Per Mile

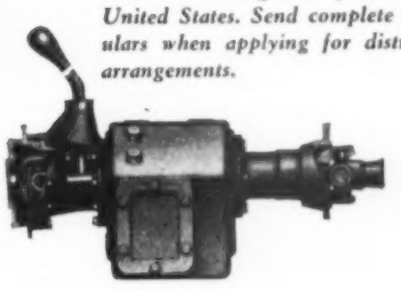
More Power for Pulling

Low Cost Light Weight

Pays for Itself Quickly

It's true that the standard ratios of both Ford and Chevrolet trucks are well suited to average conditions. Yet there are thousands of trucks that operate under conditions far from average. Some may need extra low ratios for starting heavy loads or for steep pulls—others travel lightly loaded on long level hauls. The same truck is VERY APT to meet BOTH EXTREMES and when it does the Watson Compound is the ONLY solution. It delivers low-ratio-power or high-ratio-cruising-speeds with 23% fewer engine revolutions instantly when needed! Wear and tear is decreased, oil and gas is saved and the overall economy, as well as utility of the truck, is greatly increased. The Watson Compound is easy to install—half a day is sufficient. Every truck or fleet operator will be money ahead for every mile traveled with Watson Compounds.

Excellent distribution areas are still available in different parts of the United States. Send complete particulars when applying for distributor arrangements.



This Watson Compound can also be installed on all 1 to 3-ton Trucks

Built by **BROWN-LIPE** *Exclusively for* **H. S. WATSON CO.**

WATSON COMPOUND TRANSMISSIONS

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OVER DRIVE

See Your Dealer or Write to

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NOW A SCHRADER PENCIL-TYPE TIRE GAUGE

for higher pressures

TRUCK, BUS, TRACTOR

POPULARLY PRICED*

CAR OR POCKET CLIP

No. 8100

Calibrated 20 to 120 lbs. in five-pound units. Has white satin finish airplane alloy indicator bar with black numerals.

***LIST $1.00**

Here's an accurate new Tire Gauge for the higher pressures. It is neat, compact, serviceable—and popularly priced. Every truck, bus, tractor owner and serviceman should have one. Assures more frequent air-pressure testing and better records of proper tire inflation. The ultimate economies, in less tire trouble and greater tire mileage, are obvious. It's a Schrader product—which means utmost quality and dependability, in the shop and on the road. Obtainable through your regular source of supply.

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Schrader
Reg. U. S. Pat. Off.

TIRE-SAVING VALVES, CAPS AND GAUGES

Be sure it's a Schrader—Look for the name

operators have told us that they save these tabulations, filing them directly under the subject discussed, where they will be handy for future reference. This month the questionnaire covers "Oil Filters on Engines." It's on page 51, gentlemen. We'd appreciate your cooperation. The more, the merrier; and the more *representative!*

●

Compulsory Safety Glass Legislation in 21 States

THE number of states with laws requiring the installation of safety glass in motor vehicles has more than doubled, as the result of legislation enacted since the first of this year.

The progress of safety glass legislation was disclosed in a report issued recently by the Automobile Manufacturers Association based upon a study made by Frederick A. Hastings, Secretary of the Association's Legislative Committee.

As the supply of safety glass became available, its use in the manufacture of automobiles has steadily increased to the point where it is now standard equipment on most of the higher priced cars and in the windshields at least of practically all makes of cars.

Thirteen states have enacted compulsory safety glass legislation this year, Mr. Hastings reported. This brings the total number of states having laws of this kind to twenty-one. In addition a safety glass measure has passed both houses of the California legislature and now needs only the Governor's signature before it becomes a law.

Practically all of the new laws, according to Mr. Hastings, follow a fairly uniform pattern in that they require safety glass of a type approved by the state motor vehicle authority as a prerequisite to registration of new vehicles manufactured and sold in the state after a certain specified date or on school buses and common carrier passenger vehicles operating in the state after a specified date.

None of these laws require that safety glass be installed in vehicles that were in use prior to the effective dates of such laws. However, Mr. Hastings pointed out, in several states it is provided that where it becomes necessary to replace glass in such vehicles, such replacements must be made with safety glass.

States now having safety glass legislation are listed below. The date shown indicates when the laws become effective. Where no dates are shown, the laws are already effective.

Colorado	(all vehicles)	Jan. 1, 1937
Connecticut	(all vehicles)	Dec. 31, 1935
Delaware	(all vehicles)	July 1, 1935
Indiana	(all vehicles)	Jan. 1, 1936
Iowa	(all passenger vehicles)	July 1, 1935
Maryland	(all vehicles)	July 1, 1935
Massachusetts	(all vehicles—windshields only)	.....
Michigan	(all vehicles)	.....
Missouri	(all passenger vehicles)	Jan. 1, 1936
Nebraska	(all passenger vehicles)	.....
New Hampshire	(all vehicles)	Jan. 1, 1936
New Jersey	(all vehicles)	July 1, 1935
New York	(all vehicles)	.....
North Carolina	(all vehicles)	Jan. 1, 1936
North Dakota	(school buses and for-hire passenger carriers)	July 1, 1935
Ohio	(all vehicles)	Jan. 1, 1936
Oklahoma	(school buses and for-hire passenger carriers)	Sept. 1, 1935*
Pennsylvania	(all vehicles)	.....
Vermont	(all vehicles)	Jan. 1, 1936
Virginia	(all vehicles)	Jan. 1, 1936
West Virginia	(all vehicles)	July 1, 1935

* However, applies to all vehicles manufactured after July 1, 1935.

Truck Drivers Can Teach Safety

FROM 1927 to 1934 the number of passenger cars involved in accidents jumped 55 per cent., according to *Accident Facts*, recently published by the National Safety Council.

During this time the number of such cars registered increased only seven and one-half per cent. The annual mileage increased some during the period, but not enough to account for the tremendous advance in accidents.

The record of trucks, on the contrary, is favorable during these same years. From 1927 to 1933, commercial trucks involved in fatal accidents decreased five per cent. A reversal of trend in 1934 carried the total up to a point nine per cent above the 1927 figure, but in the seven-year interval truck registrations had advanced eleven per cent and total mileage increased even more.

Taxi Record Improves

Taxicabs are relatively few in number and are, therefore, more subject to chance fluctuations from year to year. Despite this fact, their record has improved consistently throughout this period. By 1934 the number of taxis involved in fatal accidents was only 43 per cent of the 1927 total.

Buses have had a more variable record, but on the whole it has been good. In 1929 there were nine per cent more buses in fatal accidents than in 1927, but in 1930 there were five per cent fewer. The total continued to decrease until 1932, in that year reaching a point 27 per cent under the 1927 figure. In 1934 a sudden increase cancelled part of the gains, leaving the total only ten per cent below 1927.

Safety Programs Help

The great difference between private car and commercial vehicle accident trends, says the National Safety Council, lies in the recent development of good safety programs for the latter.

The private driver is his own "boss" and he may take chances if he is willing to assume the risk; the commercial vehicle operator, on the other hand, must drive safely or lose his job.

•

Ford Exhibits at Atlantic City

THE "largest automobile exposition in the east" was opened on the Steel Pier in Atlantic City last month by the Ford Motor Company. The Ford Exhibit is now open to the public.

In addition to a display of automobiles, a complete line of Ford products make up a large portion of the exhibit. Motor assembly demonstrations and other features connected with the manufacture of Ford cars also have a prominent part in the exhibit. New features will be added from time to time, in accordance with the policies in force at the San Diego Fair.

The interior of one side of the Steel Pier has been completely redecorated from top to bottom necessitating the expenditure of thousands of dollars. Because of deterioration caused by weather conditions, it has been necessary to lay a new floor. Ceiling and walls are painted in a harmonious color scheme featuring the internationally famous Ford blue and silver.

•

World Bestos Cleveland Warehouse

A SUFFICIENT increase in business to warrant a warehouse arrangement at Cleveland is announced by World Bestos, Paterson, N. J. . . . Similar warehouses are now maintained at Detroit, Chicago, Atlanta, Dallas, Los Angeles, San Francisco, Portland and Seattle. . . . It is also reported that sufficient orders are on hand to warrant factory operation on a 24-hour basis for the production of moulded "Grafild" brake lining.

•

May Motor Production 377,754 Units

MOTOR vehicle production in May was 377,754 units, according to the preliminary estimate released by the Automobile Manufacturers Association.

This represents an 8 percent increase over May of last year and a 25 percent decrease from April this year.

On the basis of this estimate, the industry's output for the year to date almost reached the two-million mark. Five months' production amounted to 1,988,637 cars and trucks,—a 35 percent increase over the same period of last year. The monthly estimate which is based upon reports of factory shipments is summarized below:

Month	1935	1934
January	303,424	162,570
February	353,813	238,827
March	451,809	352,614
April	501,837	371,338
May	377,754	350,616
First five months	1,988,637	1,475,965

•

Sets Taxi Economy Record

WHAT is claimed to be a spectacular record for economy, has been made by a fleet of ten Plymouth taxicabs, operated over the streets of Birmingham, Ala., for one one-hundredth of a cent per mile for maintenance. F. S. Dunlap, manager of the Dunlap Yellow Taxi Service declares that he has spent a grand total of $13.78 for maintenance since he bought the cab fleet in April. If you are interested in how he did it, perhaps we can get Mr. Dunlap to write an article on the subject. Let us hear from you, please, Mr. Dunlap.

You Can Count 'em on one hand!

. . those factories that have adopted any other Valve Seat Grinder for production.

31 Motor Builders have Adopted ECCENTRIC Valve Seat Grinding for Their Production or Service.

There are ten other reasons why YOU should buy an ECCENTRIC Grinder . . not one reason why you shouldn't. The Cost? . . but a few dollars more than a Concentric Grinder. Ask your Jobber or write factory for the Ten Reasons and a FREE DEMONSTRATION.

NEW LOW PRICE ECCENTRIC VALVE SEAT GRINDER

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THE HALL MFG. Co.
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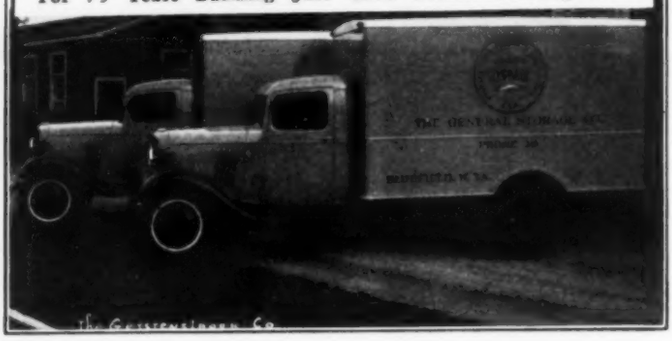
Complete with Diamond Dresser in Metal Case . . . Pilot and Wheel Sets as low as $14.50

DO YOUR BODIES SHOUT SUCCESS?

They will if built by

THE GERSTENSLAGER CO. **Wooster, Ohio**

For 75 Years Building Just Good Bodies—Nothing Else.



MARVELOUS NEW PAINT SPRAY GUN

Handles all types paint, lacquer, etc., especially the new synthetic enamels. Lighter in weight, widest spray, perfect atomization, air purifiers, 5 and 10 gallon pressure outfits, accessories, etc.

Write for Catalog.

The Alexander Milburn Company

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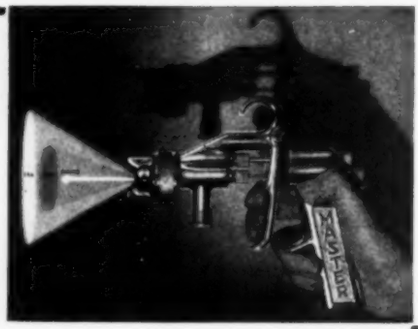
VELLUMOID

Don't judge VELLUMOID by other packings which have been put on the market and sold as "similar to" or "as good as."

There is only one VELLUMOID—Look for this name on the Packing and Gaskets you buy.

The Vellumoid Co., Worcester, Mass.

GOOD paint jobs require a good painter, and a professional painter must have the proper paint spray equipment. You cannot expect real paint jobs with old worn out and obsolete equipment. The new Master BC-2 Production Gun produces the smoothest finish you have ever seen.



Ask your jobber or write for particulars.

AMERICA'S SMOOTHEST SPRAY GUNS PRICED AT ONLY $17.50

ALSO TIRE BRANDING IRONS

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Analysis of N. Y. State Auto Legislation

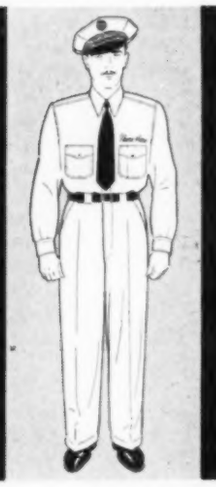
THE following are excerpts from the Legislative Analysis issued by the Automobile Merchants Association of New York, Inc., to its entire membership last month.

Among the more important problems attendant to State Government, is the ever-growing and changing problem of control and regulation of motor vehicle transportation. The New York State Legislature, recently adjourned, considered approximately 450 bills relating to the control of motor vehicle transportation either directly or indirectly.

When one considers that a law pertaining to motor vehicle regulation in the state affects directly two families out of three and every man, woman and child indirectly — it is only right that such a portion of legislative deliberation be set aside for this purpose.

Every session of the legislature sees the proposal of many plans for the further regulation of the motorist. Some of the plans are of great merit and accordingly receive the approbation and support of those organized bodies that are continually striving for the correct and just regulation of the automobile and its user. But — as has been true in the past — attempts to foist unjust and detrimental legislation on the car owner were again attempted this year.

The notorious Gillen Bill, designed to force every motor car regardless of age or condition to carry a special type of license plate and illuminator, would have cost the State in the neighborhood of ten millions of dollars and have drained an additional twenty-three millions from the motorist themselves. Fortunately, Governor Lehman, sensing his public duty at the behest of thousands of outraged motorists and the appeals of



Uniforms for Summer? Here's the Solution!

Investigate the most outstanding uniforms and proposition in America! Famed HANOVER Regulation Uniform Shirts, Slacks, Breeches, Caps and Ties are supreme in design, in fabrics, in custom workmanship, in fit. True regulation style. Specially woven fabrics, guaranteed pre-shrunk and fast-color. Tests prove they outwear ordinary fabrics 3-to-1. Write today for complete catalog and actual samples—prepaid and no obligation.

DIRECT LOW WHOLESALE PRICES! IMMEDIATE DELIVERY!

HANOVER UNIFORM CO.

A Division of Hanover Shirt Co., Inc.

120 S. Hanover St., Baltimore, Md.

The BIG LIFT

Here's tremendous power, wide range, easy operation—in a full line of hydraulic jacks, hand and floor types, from 1 to 75-ton capacities. For floor, curb, road, and shop use — Buy Blackhawk. Ask your Jobber Salesman. Write us for literature.

Blackhawk Mfg. Co. Dept. F. O. 7 Milwaukee

BLACKHAWK HYDRAULIC JACKS

organizations throughout the State, vetoed the bill.

Another proposed legislative act was designed to restore to municipalities the privilege of charging bridge tolls over rivers and canals. It was inconceivable that return to such an outmoded system should be tolerated and organized protest again urged our legislators to strictly adhere to the progressive and modern policy of our highway system.

Safety glass has become a recognized factor in the modern construction of the automobile, but it is a comparatively recent development. Therefore, the bill making it unlawful to operate any motor vehicle on the highways of the state after January 1, 1936 unless the vehicle was equipped with Safety-glass, would have imposed a further burden on all owners of automobiles. This bill received the concerted protest of all organizations interested in protecting the motorist and was held in Committee. By law already passed, all motor vehicles manufactured or assembled after January 1, 1935 must be equipped in this manner.

The increasing loss of life through motor vehicle accidents have caused law makers throughout the country to seriously consider the passage of protective measures. Among the laws passed at the last session of the legislature for the purpose of making the safety and welfare of the motorist and the pedestrian more complete were bills providing:—

1. For driving with faulty brakes to be considered a misdemeanor.

2. For suspension of Learner's Permit for violation of the Financial Responsibility Law.

3. For periodic inspection of omnibuses operated by school districts.

4. For regulations to keep heavy trucks and tractors at safe distance from each other when in operation.

5. For making it mandatory for large trucks and omnibuses to carry emergency flares.

6. For prohibition of operation of automobiles with more than three adults in front seat.

7. For standardization of traffic control signals.

The Legislature has authorized the completion of the Canal Street-Battery link of the West Side Elevated Highway and the construction of an East Side Elevated Highway from Grand Street to East 54th St., two very important parts of the plan for relief of traffic congestion in New York City proper. It established a Queens-Mid-Town Tunnel Authority for the building of a tunnel under the East River from Manhattan to Queens and a Rockland-Westchester Hudson River Crossing Authority for the purpose of constructing a bridge or tunnel under the Hudson River between Nyack, N. Y. and Tarrytown, N. Y.

By resolution, $75,000 was appropriated and a Joint Legislative Committee appointed for the purpose of making a comprehensive study and investigation of compulsory automobile insurance.

An additional $10,000 was appropriated to continue the work of the joint Legislative Committee studying the possibility of making uniform traffic rules throughout the States in accordance with the formula approved by the National Street and Highway Safety Conference.

"LOW MILEAGE COSTS ARE MADE IN THE SHOP!"

"Economical road operation depends on efficient maintenance methods in the shop. No question about that . . . and no wonder every step in our truck repair maintenance work is closely watched."

Because cleaning is a major item in maintenance, it often affords the opportunity for substantial savings. That is why so many prominent fleet operators have investigated Oakite materials and methods . . . have standardized on them for washing chassis, cleaning repair parts, washing motors, stripping paints and synthetic lacquers. Costs are kept low, uniform precision cleaning is obtained day after day.

You, too, can profit by the helpful suggestions the Oakite Service Man located near your shop can give you on all your maintenance cleaning. Write today to have him call. No obligation.

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TRADE MARK REG. U.S. PAT. OFF.
Industrial Cleaning Materials and Methods

INDUSTRY'S ACCEPTED STANDARD OF CLEANING SINCE 1909

Are YOUR Trucks Under Your Thumb?

—or, are you trying to manage them by guesswork?

How are you going to keep track of them all day when they are "out of sight, out of mind"?

The answer is in three words —
"Install SERVIS RECORDERS."

This little device on each truck puts on your desk every day a chart showing you every movement of the truck the day before—*Busy* Time and *Idle* Time.

That puts control right under your thumb—no "maybe's"—no arguments.

Write for the Booklet A.

THE SERVIS RECORDER
"Keeps Trucks Busy"

THE SERVICE RECORDER COMPANY
Established 1910
CLEVELAND · OHIO · U.S.A.

The New M-H Trucks

(Continued from page 47)

standard Marmon-Herrington features and a wide range of utility and performance, it is claimed.

The Marmon-Herrington Company announces a revision in prices, which in the opinion of company officials, makes these new trucks the greatest values which they have ever offered. . . . For further information, illustrated literature and prices, write to Marmon-Herrington, Indianapolis, Ind. . . . Mention of FLEET OWNER always helps to secure prompt service.

•

Moorhouse New Morse Chain Chief

APPOINTMENT is announced of Alfred Moorhouse as chief engineer of the Automotive Division, Morse Chain Company, with headquarters in Detroit. Mr. Moorhouse has been in the industry since 1905. He was formerly with Cadillac and Hudson and was chief engineer for Packard for twelve years.

•

Olson Bendix Chicago Branch Manager

ANNOUNCEMENT of the appointment of Frank C. Olson to the post of manager of The Bendix Products Corporation branch in Chicago was made recently. Mr. Olson, who has been associated with Bendix for the past six years, formerly served with the old Bragg-Kliesrath Corporation, having specialized on fleet sales work. Our best to you, Mr. Olson!

•

Pierson Elected USL v. p.

FOLLOWING the resignation of A. A. MacLean, the board of directors of USL Battery Corporation announced the election of R. T. Pierson as vice-president and general manager. . . . Mr. Pierson has been connected with the USL Company as manager of the power battery division and brings to his new position a wealth of executive experience.

UNIFORMS for DRIVERS

(One or One Hundred)

STAR has a Driver-Uniform Proposition that will interest every fleet operator—large or small. Many large fleets, from Coast to Coast, are now Standardizing on Star Uniforms. They are not as expensive as you might think.

STAR includes, FREE, the name of your firm neatly embroidered on each Uniform. The fabrics are attractive, durable and INEXPENSIVE! New Summer Styles Now Ready!

Catalog and Samples Yours for the Asking

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GENUINE

KINGSTON SPARK PLUGS

For All Driving Conditions

Write today for big FREE SERVICE MANUAL—every fleet superintendent should have one!

KINGSTON Products Corp.
KOKOMO, INDIANA, U. S. A.
Makers of the Kingston Carburetor, Vacuum Tanks, Ignition Parts and Home Radio Receivers.

A "New Deal" in Milk Delivery

(*Continued from page* 18)

One of the uniformed drivers, who has had a number of years of experience on retail milk routes, was asked about this new method of delivering milk—the C. J. Wieland & Son, Inc., way. First, he mentioned how much more friendly the drivers are to each other, especially early in the morning, and what this meant in getting started right on one's route; then he very pertinently remarked that his son described the change for the better most pointedly by saying he didn't smell "horsey" any more.

The dark-gray uniform of each driver includes a blouse with zipper and front pocket and a ventilated visor cap. The pockets in the trousers are oversized and of leather for carrying money. The special company emblem, the same as on the trucks, in gold on the cap above the visor and over the front pocket of the blouse always identifies the men as driver-salesmen for C. J. Wieland & Son, Inc. A clean shirt with black tie completes the ensemble. The uniforms are dry cleaned and pressed every ten days.

By providing the men with clean, attractive uniforms, Mr. Wieland said it is easy for the men to talk cleanliness to the customers and get the idea effectively over that milk delivered in these special C. J. Wieland & Son, Inc. refrigerated trucks operated by uniformed drivers IS clean.

To be successful in the milk business, Mr. Wieland declared, you've got to have a quality product and you've also got to give real service, but you first must give the driver service so he in turn can give the proper kind of service to the customers. One of the surest ways to accomplish this, Mr. Wieland states, is to provide the men with up-to-date equipment such as these new refrigerated house-to-house delivery trucks, which help so much to improve the drivers' working conditions, both in the way of comfort and cleanliness.

In selecting new drivers, Mr. Wieland said he likes to hire men who are clean-cut and at the same time quiet and unassuming. He has no time for the boastful type, he asserted. He also tries to fit the man to the neighborhood he travels in; if Polish people predominate on a man's route, for instance, then a Polish driver should operate that route. Before being hired, a man must also pass a physical examination.

The men work on a combination salary and commission basis, receiving $40 a week salary and 6 tenths of a cent for each point over 1,330 points. In dairy parlance, a point is a quart of milk or its equivalent in value of other products such as buttermilk, cream, chocolate milk, cottage cheese, tomato juice, eggs, or butter. All drivers are union men.

Meetings of the drivers are held monthly at which talks on sales and safety are always in order. It is planned also to have dinner meetings at least twice a year. As a safety measure, all trucks are provided with governors which permit a maximum speed of 25 miles per hour. The average length of each route is 35 miles, and the average number of stops per route, 200. The thirty routes now are all located in the north side and northwest sections of Chicago and include several neighboring suburbs such as Evanston, Wilmette, Winnetka, and Park Ridge.

The C. J. Wieland & Son, Inc. plant covers an area of 75 feet by 150 feet and is modernly equipped throughout. It has a present capacity of 12,000 pounds of milk and cream a day. The garage, which is 25 feet by 75 feet in size, is also located at this plant and

(*Please turn to page* 64)

A SAFEGUARD

Service Managers are faced with the necessity of exercising care when choosing break-in oils for the lubrication of copper-lead and cadmium-silver bearings. ⋄ When considering adjunct oils, those containing "dag"* Brand colloidal graphite must not be confused with lubricants which enter into chemical combination with the metal. While the successful use of many high pressure anti-friction bodies depends on such chemically active constituents as chlorine, fatty acids, sulphur, etc., other lubricants exert their influence through physical rather than chemical means. Acheson's colloidal graphite, falls in this class. ⋄ Proper use of this material forms on friction parts a self-lubricating, mirror-like film of graphite which assures extra protection against metal-to-metal contact in cases of temporary oil film rupture. ⋄ There are numerous auxiliary lubricants now available on the market in which this material is contained. Technical Bulletin 112W is available on request.

*Reg. U. S. Pat. Off.

dag COLLOIDAL PRODUCTS

ACHESON COLLOIDS CORPORATION

FOUNDED 1908 AS ACHESON OILDAG COMPANY

PORT HURON • MICHIGAN

Look! Most of the tread is worn off yet the tire's good below the dotted line.

New Live Rubber

Added to Your

Good Worn Tires

by the

HAWKINSON SYSTEM

No heating of Shoulders and sidewalls

New Safety, more than the original mileage put back in your tires at a fraction of their original cost—it will pay you to investigate.

Now see the difference. More Tire mileage with a Hawkinson Tread.

●

Complete exclusive Hawkinson Tread Equipment now in operation in over One Hundred and Twenty Cities

HAWKINSON TREAD

Write for literature fully describing Hawkinson Method of Tire Treading. Do not confuse with ordinary tire re-treading.

PAUL E. HAWKINSON CO.

Northwestern Terminal **Minneapolis, Minn.**

is just large enough to house the thirty new trucks. Mr. Wieland said he is planning to build a new garage and utilize the present garage for plant expansion. One mechanic and one washer are employed in the garage. Each truck is washed every other day.

Mr. Wieland has been connected with the Chicago dairy industry during his entire business career, having begun in a humble way at the age of fifteen years with his father, who first engaged in the dairy business in 1893. Throughout much of his colorful career he has been a leader in Chicago dairy developments and has served as president of several prominent dairy companies.

Associated with him in this new venture are his son, Harold G. Wieland and Dewey A. Tannler. It is operated under the firm name of C. J. Wieland & Son, Inc. Mr. Wieland, of course, is president; his son, who is thirty-two years old, is vice-president; and Mr. Tannler, secretary and treasurer.

●

How to Match and Inflate Dual Tires

(Continued from page 39)

the two tires. The worn tire should be on the inside.

Illustration "D" shows an example of correct matching. There is only a slight difference in the wear of the two tires. The tire which is worn more is on the inside position.

Full service from truck tires cannot be expected unless they are correctly matched. Correct matching will make a material difference in tire costs.

●

RUST IS A ROBBER

CLEAN OUT AUTOMOBILE RADIATORS WITH

Sani-Flush

*Rids radiators of rust, lime, and clogging sediment—quickly and thoroughly.

*Prevents overheating. Insures radiator circulation, saves power and fuel. Puts an end to expensive repair bills.

*Should be used to flush radiators clean before filling with anti-freeze.

*Costs 6c per cleaning for cars—15c for largest trucks and tractors.

*Comes in economical 25-pound pails.

*Sani-Flush is non-caustic. Cannot harm radiator, water jackets or aluminum cylinder heads.

WRITE TODAY, on your firm's stationery, for a generous free trial. No obligation, of course.

The HYGIENIC PRODUCTS CO. Canton, Ohio

PHILADELPHIA'S MOST CONVENIENT HOTEL

600 Rooms, each with bath
Rates from $2.50

UNLIMITED PARKING

HOTEL PENNSYLVANIA

39th and CHESTNUT STREETS

ARMORPLY

A SUPERIOR METAL FACED PLYWOOD PANEL FOR BODY CONSTRUCTION

Write for samples and prices

UNITED STATES PLYWOOD CO. INC.

603 W. 36th. ST. NEW YORK CITY

Yes, We HAD No Rubber Fenders!

(*Continued from page 22*)

The tire thus treated was then split in two, and we have, as a result, two perfectly good rubber mud-guards. The 3/16-inch cord underneath the gum rubber makes a bead just large enough to fit snugly up against the edge of the wheel-housing, and also facilitates locating the mudguard on the coach itself.

These particular mud-guards are 76 inches long and about 6 inches wide—3 inches of the width being on the inside of the wheel-housing, giving sufficient width for secure anchorage. The 3-inch section which protrudes outside of the body prevents dirt from being flung onto the body by the wheels.

The cost of these mud-guards was negligible due to the fact that only the 3/16-inch cord and gum rubber had to be purchased; and one of our tire men can turn out eight or ten of these rubber mud-guards per day. When we realized how nicely these mud-guards turned out, we did some healthy "cussing" because we had not thought of the idea sooner, and thus saved ourselves a lot of trouble and fruitless correspondence.

Your Editor asked us to explain the meaning of the name "Sunoco" which appears on the bus shown at the head of this article. These coaches are painted in ivory, with a vermillion band carrying ivory lettering. The rub-rail and mud-guards are painted black. The name "Sunoco" refers to the terminal of one of our principal routes, and *not* to the products of the well-known oil company. "Sunoco" is the name of a thickly populated suburb of San Juan, and was so named, it is believed, some years ago, due to the location there of an oil refinery operated by the aforementioned oil company.

(EDITOR'S NOTE:—Many operators thought we were kidding, when we mentioned "rubber fenders" on our Editorial page, some months ago. Mr. McMurray, who contributed the foregoing article, thought he would like to help us convince you that rubber fenders are now an actuality. And if you desire more details regarding the "ready-made" type, all you have to do is ask us. —H.C.F.)

●

Color Combinations for Trucks

(*Continued from page 28*)

colors are used, such as pink and yellow and pale blue in combination. For brewery trucks, green and amber or purple-blue and amber have been found to appeal best because they have an association with beverages, and because the combination of green and amber is more stimulating, vibrationally, to the retina of the eye, it is more to be desired where attention value is a primary consideration.

It will be found in some instances, that specialty trucks and delivery equipment require more novel treatment. As the business of a florist is a highly colorful one, the colors used on a delivery truck for such a business should be brilliant and outstanding, yet, should reflect good taste.

Delivery equipment for dry-cleaners should reflect cleanliness and sanitation, just as grocery trucks and other commercial vehicles in which foodstuffs are delivered to the homes, should have a clean and sanitary appeal. However, for general purposes, any one of the suggestions for color arrangements outlined, if appropriate in the field of use for which the vehicle is intended to serve, will suit admirably.

Color can be most effective when used according to

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New Degreasing Process Thoroly Cleans Metal Parts in a "Jiffy"

● Now, without scrubbing, soaking, dirty mess, or danger of fire, any grease covered metal part from engine block to small gadget can be thoroughly cleaned and dried in just a few minutes. The sensational new Degreasing Machine utilizing super powered, noninflammable, CircoSolv, especially adapted for automotive greases, completely solves all cleaning problems. Leaves all metal parts in perfect condition. Solvent can be used over and over indefinitely. You will truly marvel over the speed, thoroughness and low cost of this advanced degreasing process. To get complete information without delay write or mail the coupon below, today. ★

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MACHINE
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Send me complete information on the new Degreasing Machine and CircoSolv.

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For "controlled circulation" papers the C.C.A. furnishes a certified audit of circulation.

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These factors are worthy of your careful consideration.

Join the C.C.A. by all means if you can but in any event use its audited statements and demand similar authentic circulation data from publishers who are not members.

CCA

known color preferences of the market represented. Color can express the quality of wares quite as well as it can serve to identify them, and the use of distinctive, properly associated colors on commercial vehicles will help to advertise a commodity, and will fix the operator's name more indelibly in the mind of the consumer. An attractive delivery car is more than a service unit; it is a real piece of publicity for the company which owns it.

Your Editor has arranged to provide complimentary advice on the selection of suitable color-schemes, regardless of the particular finish you are at present using. Should fleet operators desire to take advantage of this service, just present your problems to the Editor, and the "exterior decorator" will be glad to suggest the most satisfactory color-scheme for your fleet, without obligation of any kind.—H.C.F.

•

An "Inside Story" About Valve Insides

(Continued from page 36)

helped to eliminate this trouble.

Of course, and in spite of the moral to this story, certain fleet operators will be inclined to "laugh off" the matter. Some will even say, "They're just trying to sell us more valve-cores and valve-caps." They will even ask "Why are new valve-cores necessary when a tube is repaired; and why is a cap necessary, as long as the valve-core does not leak? The answer is an old story, but we shall repeat it here, if we may.

When repairing a tube, the valve-inside is removed to obtain complete deflation. The valve-inside seat or seal is disturbed by this removal. In replacing, it is seldom that the old valve-inside seats or seals itself with the original security, and a slow seepage of air results. This slow leak will not show up under the ordinary water test because the tube will stand only a small amount of air pressure if it is not constrained inside the tire casing. When the tire and tube are mounted on the wheel and inflated to 35 or 40 pounds pressure, the air works through the old valve-inside. A slow seepage of air will not be noticeable for some time, but as the tire softens, punctures are picked up more easily and, too, the greater flexing caused by underinflation, just as bending a wire rapidly back and forth, quickly breaks down the normal tire strength and causes premature failure and blowouts.

It is the function of the valve-cap to protect the valve-inside from dust, dirt, grit, etc., and also to act as a secondary, air-tight seal. Although the valve-inside will hold considerable air pressure, it is intended only to permit inflation of the tire. The valve-cap fully protects the tube from any valve leakage and at the same time prevents dirt and water from injuring the valve-inside. The experience of the fleet in this story again provides adequate proof of the necessity for equipping every valve-stem with a valve-cap.

Uninterrupted service means much to efficient low cost fleet operation. Attention to valve-inside and valve-cap equipment will aid substantially in obtaining low cost, trouble-free service from tires and tubes. What do *you* think?

(EDITOR'S NOTE: *The data which appears in the foregoing article has been brought to our attention by Mr. B. S. Byall of the Dill Manufacturing Company.*)

More Safe Drivers Get Awards

EIGHTEEN route drivers of Braley's Creamery, Inc., of Fairhaven, Mass., have recently received certificates of merit, awarded in recognition of their skill and care in operating their motor-vehicles for periods of one to four years without an accident.

Cooperating with the Creamery, The American Policyholders' Insurance Company furnished the certificates, a feature of its service to policyholders in helping them to prevent accidents. Inscribed with the driver's name, the certificates were presented by G. F. Braley, treasurer of the company, at sales talks conducted at branch plants.

●

Petroleum Trucks Have Low Accident Rate

MOTOR vehicles operated by the petroleum industry, including tank trucks, are involved in fewer accidents than the vehicles operated by any other group of commercial fleet operators. They are involved in less than two accidents for every 100,000 miles traveled. This compares with an average of approximately three accidents per 100,000 miles for all commercial vehicle fleet trucks.

These facts are brought out in a tabulation of accidents compiled by the National Safety Council, Chicago. The compilation includes such accidents as resulted in death, personal injury or property damage, regardless of who was hurt, what property was damaged or who was responsible.

Variation in accident rates between the various classifications of vehicles is wide, ranging from a low of 1.99 for petroleum trucks and 2.09 for inter-city trucking to 6.50 for newspaper delivery trucks and 6.95 for fuel delivery vehicles.

The table compiled by the Safety Council is given below:

	Number of Vehicles	Number of Vehicle Miles (Thous.)	Number of Accidents	Rate*
Commercial trucks	36,129	463,423	14,232	3.07
Petroleum	10,208	150,434	2,989	1.99
Inter-city trucking	331	10,042	210	2.09
Miscellaneous manufacturing plants	335	4,571	99	2.17
Ice	276	2,537	60	2.36
Transfer and storage	265	3,897	96	2.46
Other light delivery	200	3,489	87	2.49
Public utility	12,130	128,561	3,556	2.77
City and inter-city trucking	509	9,237	263	2.85
Bakeries	2,046	30,304	957	3.16
Dairies	1,087	13,435	431	3.21
Meat packing	731	10,708	407	3.80
Beverages	501	5,080	208	4.09
Laundries	1,337	16,628	702	4.22
Coal and ice	1,208	11,401	544	4.77
Building materials	146	1.730	87	5.03
City trucking	2,047	20,827	1,081	5.19
Department stores and other retail delivery	1,512	23.066	1.290	5.59
Newspapers	570	11,001	715	6.50
Fuel	690	6,475	450	6.95

* Rate equals the number of accidents per 100,000 vehicle miles.

UTILITY Six Wheel Attachments (Third Axles)

Have proved to be the SIMPLEST, most FLEXIBLE, and most EFFICIENT means for converting 4 wheel trucks into practical six wheelers

UTILITY Dealers have had more than 10 years continuous experience in converting four wheel trucks over to six wheelers. They are fully prepared to lengthen truck frames, install transmissions or "what have you" in connection with truck conversions.

Dry Ice Third Axle is a UTILITY

Note These Five Advantages— Exclusive in UTILITY

1. DRIVE WHEEL TRACTION INCREASES WHEN ACCELERATING.
2. BRAKE REACTION EQUALIZED.
3. TRUCK FRAME SUPPORTED AT FOUR POINTS BACK OF CAB.
4. NO CHANGE IN TRUCK PARTS OR STANDARDS TO INSTALL.
5. MAXIMUM SIMPLICITY.

Utility is the largest Western United States manufacturer of TRAILERS ALSO SIX WHEEL ATTACHMENTS. (Third Axles).

Dealers All Over the United States

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Ford Builds Two-Millionth V-8

THE 2,000,000th V-8 Ford—the one millionth Ford built in less than 12 months and approximately the 23,000,000th Ford ever built—was produced last month at the Rouge Plant of the Ford Motor Company, Dearborn, Mich.

Henry Ford, founder, and Edsel Ford, president of the Ford Motor Company, watched the final assembly of the historic Ford.

The completion of 1,000,000 Fords in less than a year since the 1,000,000th V-8 Ford was manufactured June 19, 1934 recalled Mr. Ford's prediction late last year that the Ford Motor Company "would build better than a million in 1935."

The 2,000,000th V-8 Ford is the fourth historic Ford car which has blazed a transcontinental trail to the Pacific Coast, each over one of the four principal trunk highways between the Atlantic and Pacific.

Back in 1909, a model T Ford, then virtually a newcomer in the automobile field but destined to become the most famous type of motor car ever manufactured, dashed across the continent from New York to Seattle to win the Guggenheim Trophy in a transcontinental race ending at the Alaska-Yukon-Pacific Exposition. Mr. Ford himself greeted the winning Ford car at the finish.

The next historic Ford to write transcontinental history was the 10,000,000th Ford, another Model T which, after it came off the assembly line at the Highland Park Plant in 1924, was driven from New York to San Francisco over the Lincoln Highway.

The third was the 20,000,000th Ford, a Model A. After it was completed at the Rouge Plant in 1931 it was driven to New York and thence across the country to Los Angeles and San Francisco.

The fourth Ford to make transportation history was the 1,000,000th V-8 Ford which was manufactured at the Rouge Plant June 19 last year and driven to Chicago where it was placed on exhibition at the Ford Exposition at the World's Fair.

●

The Trend in Legislation

WHILE state legislatures have dealt kindly this year with motor vehicles insofar as registration, ton-mileage and other similar motor fees are concerned, there has been noted a tendency on the part of states to follow the lead set by the Federal Government in assessing special taxes on the motor vehicle itself. Laws passed by Maryland, West Virginia, and Oklahoma indicate that tendency. Each of those states fixed taxes that are based upon the value of every motor vehicle when either original registration or certificate of title is obtained, National Highway Users Conference reports.

Another new development is the concerted drive against the so-called practice of "caravaning" or "convoying" of motor vehicles. In Wyoming and Nevada such operations have been defined as motor carrier operations and permits must be obtained before they can be carried out. In other states they have passed special taxes high enough in some instances to make the "caravaning" or "convoying" of motor vehicles so costly that they will probably be discontiued. For example, the Arkansas tax on "convoys" and the law which has just passed both Houses in California.

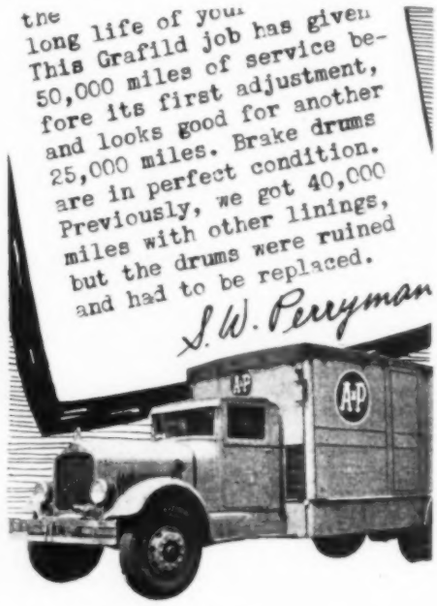
Fleet operating costs CUT by our new exclusive "FLEET SERVICE PLAN"

Between the lines of Mr. Perryman's emphatic testimony to the well-known durability of Grafild DeLuxe linings in *"Prescribed Friction Sets"* . . . lies the brand-new story of our exclusive **FLEET ENGINEERING SERVICE PLAN** that is cutting operating costs for fleets large and small.

The **FLEET PLAN** is simple yet scientific and foolproof. Just file a list of your fleet with our nearest jobber on his special forms. Our Engineering Department will prescribe the exact friction lining combination for each shoe of each brake, to insure maximum performance and longer life.

These combinations—each a precise friction "prescription"—are then packed in sealed cartons as **"Prescribed-Friction" Sets,** with full installing and trouble-preventing instructions. No more compromising, no guesswork cutting from rolls, no wrong linings, no long "lay-ups" for brake repairs (and fewer repairs necessary).

Our jobber need carry only a minimum stock of **Sets** to service any vehicle in your fleet promptly. It will pay every fleet owner and jobber anywhere to get details at once. **World Bestos Corp., Paterson, N. J.**



Grafild "FLEET SERVICE PLAN" with "Prescribed-Friction" Sets

1,300,000 Safe Miles at Night!

(*Continued from page* 20)

6. Bonus to Drivers.—We have in force a driver's bonus system which provides the proper incentive and recognition of safe driving. This, of course, results in a "perpetual" no-accident campaign.

7. Emergency Equipment.—Realizing that delays on the highway are sometimes the major causes of many accidents, each truck carries:

(a) Red flares and oil pots.
(b) Spare fuel-pump.
(c) Spare condensers.
(d) Spare bulbs.
(e) Spare fuses.
(f) Heavy-duty jacks.
(g) Tow-cable.
(h) Wooden blocks to be used for "chocking" the wheels, when truck is stopped on a grade, and to aid in jacking up the truck when necessary.

8. Sanding Equipment.—Each of these trucks also carries a sanding device, for distributing sand on icy pavements directly in front of the rear wheels. This feature results in safer winter highway conditions for other trucks as well as our own. These sanders, of course, are operated from the cab of each truck.

Since we believe that safety work pays, we employ a safety engineer, who supervises the safety activities of our entire fleet of 200 trucks and 400 passenger cars.

The majority of our passenger cars are used by our salesmen, the balance being in local service at our works and offices. The majority of our trucks, too, are in local service at our works and offices. The exception to the latter is the 5-truck fleet whose safety record has been given above. We believe that they are the most completely equipped and safest trucks on the highway. In addition to the safety equipment listed above, they are equipped with air-brakes on all wheels.

●

Where the Piston Expander Fits In

(*Continued from page* 41)

On the other hand, a skirt expander is not a cure-all for anemic pistons and hunch-back cylinders. It has its time and its place and, when appropriately used, can be a source of satisfaction as well as an economic expediency.

Some engineers recommend that a piston skirt should not be expanded more than .002" beyond its normal diameter.

Thus it will be seen that the proper handling of this problem is somewhat of a delicate matter. If an expander is correctly located and designed for the right tension, it will hold the skirt out where it belongs and keep the side wall of the piston straight and true. If the location or the tension are not correct, it can result, among other things, in making the piston barrel-shaped, a condition considerably worse than that which the expander was intended to correct.

The fitting of pistons is an art which deals with the thousandth part of an inch. Therefore the selection and the installation of a skirt expander is an equally sensitive matter which requires both skill and judgment. Skirt expander satisfaction comes from employing the principle within the practical range of its limitations and from confining public appreciation and expectation within those limits.—*M.E.W.A. Times.*

Two of the 77

CUMMINS

DIESEL-POWERED

Trucks owned by Pacific Freight Lines, Los Angeles

These trucks operate over 600,000 miles a month. Ten more trucks ordered—all powered with CUMMINS Diesel Engines, of course.

CUMMINS ENGINE CO., COLUMBUS, IND.
—The Leader in Diesel Engineering Advancement
SALES AND SERVICE FROM COAST TO COAST

3 SPEEDY REFINISHING AIDS

Permacel (the ideal paper masking tape), Jonflex (cloth) Industrial (cloth) masking tapes answer the need of the fleet owner for beauty with speed and economy. All three stick tightly under any weather conditions and leave no lint nor fuzz. Their sharp, die-straight edge makes them ideal for clear-cut color separation on panel work.

PERMACEL
A paper masking tape with a die-straight edge for perfect color separation work. Extra strong adhesive qualities make it ideal for all masking jobs.

JONFLEX
A strong, flexible tape made with a finely-woven cloth backing. Has all the qualities of Permacel.

INDUSTRIAL
Its coarser-woven cloth backing makes it ideal for those desiring a very strong masking tape. Has same die-straight edge and sticking qualities as Jonflex and Permacel.

THE REVOLITE CORP.
A Subsidiary of Johnson & Johnson
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Without cost or obligation please send me a free USEABLE roll of Permacel. I understand that all Revolite tapes come in sizes ¼" to 36" wide in 60-yard rolls.

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SHULER
TUBULAR TRAILER AXLES
Are Made of
ONE PIECE SEAMLESS TUBING

One piece seamless tube construction means extra strength, extra rigidity in Shuler Axles. For there are no dangerous welds to watch. Most important of all, no injurious heat is ever applied once the scientific heat-treating of Shuler Axles has been completed.

There is a full line of Shuler Axles for trailers and front axles for trucks and buses. Our Engineering Dept. is prepared to assist you with your axle requirements. Write today for full details.

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W. E. Dugan, President and General Manager
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FIVE YEARS AHEAD

OF THE
ALL-WHEEL-DRIVE
INDUSTRY

A *New* LINE OF
MARMON-HERRINGTON
ALL-WHEEL-DRIVE TRUCKS AND TRUCK-TRACTORS

● A full range of four and six-wheel-drive models, ranging in gross capacity from 8,400 to 52,000 pounds—every one at least five years ahead of the times in design, construction, appearance and performance.

● Revised prices, making the Marmon-Herrington line the greatest value ever offered in the industry.

● Increased engine size and power throughout the entire line—newest type Diesel engines available on numerous models.

● Many important mechanical refinements throughout the chassis—many improvements in style and exterior appearance.

● Auxiliary as well as standard transmissions in all models—always an outstanding Marmon-Herrington feature.

● Even lower frame heights—the lowest in the industry—resulting in greater safety and sure-footedness on or off the highway.

● Backed by world-wide acceptance and performance records never equaled by any other trucks built, regardless of size or price.

● An excellent opportunity for aggressive distributors and dealers throughout the country. Good territories now open. Write for details.

Model illustrated above—New Marmon-Herrington B70-4. Gross capacity 23,400 to 28,300 pounds. Standard and auxiliary transmissions with total of 10 speeds forward and 4 speeds reverse. Marmon-Herrington front axle design, air brakes and many other unusual features.

MARMON-HERRINGTON CO., INC.
All-Wheel-Drive Motor Trucks, Indianapolis, Ind., U.S.A.

CABLE ADDRESS: MARTON, INDIANAPOLIS (Bentley Code)

Studebaker Big Chief tractor in action at Summit Lake, Wash. Madsen Lumber Company praises power, brakes and clutch of this great chassis

You won't believe this!

SOUNDS LIKE AN INVENTOR'S DREAM!

NO ONE CREDITS THESE FACTS UNTIL HE SEES A DEMONSTRATION

But here is what you can do with the clutch now used in Studebaker's Big Chief and Mogul trucks:

WITH a full load, you can bring the 110 horsepower engine up to maximum governed speed and suddenly drop in the clutch.

Without jolt or jar, without shock to engine, transmission, propeller shaft, universal joints, differential, rear axle or tires this astounding clutch will pick up that load and move it smoothly forward.

That's what you can do with this clutch. And here's something you can't do:—you can't "jump" the clutch!

Yet this marvelous mechanism is simple . . . easily serviced. Not only this clutch, but the Studebaker Big Chief, as a whole, is in a class by itself.

It sells for hundreds of dollars less than any other truck of comparable power or torque.

And only in a Studebaker will you find the best brakes that automotive engineering has yet developed—duo-servo hydraulics.

We challenge you to witness a demonstration of The Big Chief and then buy any competitive chassis.

THE BIG CHIEF

3-4 ton—110 horsepower Waukesha Hy-Powr Engine—3 wheelbases

$1845

chassis at factory

THE ACE . . . $565
1½-2 ton—75 horsepower Champion Truck Engine—3 wheelbases

THE BOSS . . $945
2-3 ton—80 horsepower Champion Truck Engine—4 wheelbases

THE MOGUL . $1545
2½-3½ ton—82 horsepower Waukesha BK Engine—3 wheelbases

Base prices of chassis at factory. Let your Studebaker dealer fit the proper Studebaker truck to *your* job!

Make us show you! You can't lose!

STUDEBAKER SOUTH BEND

BUILDER OF FINE PASSENGER CARS AND QUALITY TRUCKS